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Thursday, February 11, 1982 Number 795 30p

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NEWBRAIN

FROM

Registered Office

NEWS BRIEF

Viewdata launch

IBM has launched a viewdata service designed to make its bureau network accessible to small and nedium-sized organisations.

Telephone concentrators in the major UK business centres make the bureau widely accessible by local call and the company believes that by offering support for viewdata terminals it will find a large market among companies with salesmen or engineers in the field, dealer networks or distri-

Challenge to 4321

MINI manufacturer Wang is chipping away at IBM's market with the release of an entry level version its 32-bit VS "supermini", the VS 100. It is to be known as the VS 90, and is said to give twice the performance of IBM's 4321, at 85% of the price.

Sperry slump

PROFITS were down 40% at Sperry Corp, Sperry Univac's parent, for the period ended December 31, 1981. Net profit was \$47.3 million. Profits for the same quarter of 1980 were \$79.4 million. A company spokesman said the recession, combined with a weak dollar, had badly hit the weak dollar, had badly hit the US components and systems manufacturer Zilog may be split by its parent Rixon into separate halves, following the sudden decompany's trading results, particularly in relation to overseas subsi-

Banking blueprint

FRANCE's State-owned Credit Lyonnais Bank has asked Sligos, a computer services firm in which it has an 80% stake, to produce a blueprint for a terminal network which will enable small firms to consult their cash balances on their own individual screens.

Fernandez.

Zilog has been ploughing money log into research and development virtually on the systems side, which mow accounts for half its business. Si However, Fernandez that he had resigned because the Rxxon has turned down his 1982

NAS shows interest in troubled Magnuson

RENEWED interest in Magnuson, a leading IBM plug-compatible processor manufacturer, is likely to be shown by another PCM, National Advanced

nology.

Magnuson's problems have been have been have been have losses of over \$100.000 for \$100.0000 for \$100.000 compounded by losses of over \$10 million on a turnover of under \$5 million for the last quarter of 1981, followed by the resignation of Joseph Hitt as president and his replacement by Charles "Chuck" Cole, an academic from the University of Southern California's School of Business faculty, as acting president Cole has been on the ing president. Cole has been on the Magnuson board since May 1981.

NAS is keeping its cards close to CLEMENTS . . . "No good to its chest as far as any possible Magnuson takeover is concerned.

"It does the PCM industry no tomer bases but it is a delicate situ-

looking at our competitors' custion per second class,"

manufacturer Zilog may be split by its parent Exxon into separate halves, following the sudden de-parture of several of its top man-agers, including president Manuel Fernandez.



CLEMENTS . . . "No good to see

good when we see a competitor fall by the wayside," said John Clements, managing director at already have a sizeable worldwide customer base in that machine "We are always interested in range - in the one million instruc-

pany.

Fernandez will be joined in the new venture by two other top Zilog executives, Wayne Sennett,

vice-president of Strategic Planning, and John Banning, a

It was Sennett who suggested that Exxon may be dividing the components and systems division

Another possibility being discussed in the industry is that Carl Amdahl, one of the founders of Magnuson, may return to the company despite plans to set up, with his father Gene Amdahl, a manufacturing operation in Ire-land called Trilogy.

up to their bankers now because they owe another \$16 million. If I was their banker I would try to force a merger on them. The concept of a plug compatible machine is sound, but if you execute poorly, no matter how sound your plan in theory, it will not

He added that Magnuson's new machine which the company needs to compete with the IBM 4341 was late in coming and unreliable be-cause it had to be rushed through manufacturing before it was ready.
"It was a textbook mistake — high overheads and their product was not ready on time so they had poor

"NAS had been interested acquiring Magnuson, so their in-terest could be renewed," he said.

Chief's departure may split Zilog

company, called Cosmos, will not be competing directly with Zilog and may even use its products. There is speculation that Federico

Faggin, Zilog's last president who left 14 months ago, may be behind

the new enterprise.

Meanwhile Zilog is in the hands

of three other top executives, in cluding vice-president Pepe Ple-dra, Zilog's international division

manager based in the UK.
No successor for Fernandez has

progress being made towards profitability at ICL's unnual meetng earlier this week. The American order comes on top of the 50% increase in sales achieved there in 1981, and the business plan. In a memo released of Zilog into separate companies, to Zilog employees last Friday, he Indications are that the new European and UK deals will be

particularly welcomed us sales dropped by £29 million in these areas combined last year. In a new move, the company is shortly expected to announce a

10000

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plotter, then you must look at the Servogor 28

From front page

46 staff

shed at

Nexos

TROUBLED office automation

company Nexos has made 46 employees redundant following the recent agreement to sell off the

marketing rights of its word processor to ICL.

A spokesman for the State-owned British Technology Group which controls Nexos said that the redundancies were an "inevitable

Last Friday, 46 Nexos employees received a letter from the

company personnel manager

which terminated their employ-

The redundancies have hit

in Manchester, Birmingham,
Thame, Bristol and London. They
are mainly in marketing and sales

company. Hooton had most
joined Nexos after 20 years at
IRM where he was responsible a
marketing and business planning.

Nexos employees throughout the country, including Nexos offices

ressed cautious optimism on the

onsequence of negotiations".

main store capacity, better at-working capability and will fame IBM-compatible software allows the machine to be used in System Network Architecture (SNA) at-

The complete package will be the market in October.
The price of the ageing System 10 is understood to have been to duced by 30% recently as an indcation that the range is nearing the end of its life.

Dollar boost for ICL new model in the ME29 range, it ME29 model 55. It will have me

HOOTON . . . Resigned as is and marketing director.

positions, although some functional accounting jobs may have been affected, according to be

Many of the 130 remaining as ployers are service engineer, at BTG says most are likely to mit

Nexos sales and markets

director Peter Hooton has reign

by mutual agreement with t

BTG spokesman

This means he pays IBM a re-duced licence and maintenance fee

for any program updates.
"We worked on IBM rather like a dripping tap," said George Goodwin, information systems manager of Waviri Plastics and spokesman for the IBM Users Group. "When IBM charged an all-inclusive price for software, offices went up frequently because Prices went up frequently because

by Maggie McLening NAGGING from users has finally made IBM change the way it charges for licensed software pro-

ducts and program maintenance.
As a result big savings could be in store for large mainframe installations with multiple sites, a welcome relief to the generally

upward trend of software prices.

A new scheme extends IBM's
Distributed Systems Licence Op-

ion (DSLO) from software on the

8100 and Systems 3, 34, and 38 to VM, VSB, and MVS licensed program products. The effect is to limit IBM's contact to one central location for each of its customers,

and allow the user to co-ordinate the maintenance of his own soft-

Users win big

cut in IBM

GOODWIN ... Dripping tap forced IBM to change software

sensible strategy; someone like ICI with lots of subsidiaries may not want maintenance on every site.

and under this system they will get a reduction of fees."

IBM's maintenance costs are cut because of the reduction in the they had multiple copies of programs they were being excessively penalised," confirmed Maris Rolmanis, systems support man-ager of National Advanced number of systems programmers needed for customer support. The Systems, supplier of IBM new scheme puts responsibility for copying and distribution of programs on to the user. Service

Under the extended DSLO scheme, IBM offers customers a 25% reduction in the licence fe for second and subsequent copies of a licensed program, and will deliver one copy only of the program, service updates and licensed documentation to a single leasting

location.

A further change to the pricing structure for maintenance of software will benefit customers running the same software component on more than one processor. If the customer is prepared to accept IBM customer engineering support to a single machine loca-tion, a maximum of 160% of the base local program support agree-ments fee will be charged to cover any number of machines running the same software.

of the imbalance comes from trade with the US and Japan, but it is up

to private enterprise to combat it.
The government's roles should
be "essentially catalytic", and it
should set up the "infrastructure and domestic environment in which the IT industries can achieve growth", the Minister said. But he called on managers in the investment and procurement area to "take investment and procurement decisions with the long-term objectives of the UK industrial mineral."

Britain, and until this country pur-sues business on an internationa

His uncompromising message came in a written reply to NEDC last week following the report from its Electronics Economic Development Committee.

tober by its chairman, Sir Henry Chilver, who demanded a concerted approach by the UK government and industry to

promote information technology.

Baker criticised the paper for seeking government initiatives without recommending action from industry. "If the aim of in-oreased international competi-tiveness is to be achieved, it is vital that the role of industry and the finance sector should be fully un-derstood and accepted. The not be allowed to mask the need for initiatives from the private sec-

The HEDC paper proposed that public sector resources should be concentrated on companies best placed to build internationally

,12/13

As well as many routine local authority applications already im-plemented in a variety of ways on

different mainframes, Lamsac

cites another 2,500 potential new applications which are made pos-

sible by the advent of microcom-

"It makes sound common sense

Councils urged to sell micro software

by Claire Gooding LOCAL councils are being urged by computer advisers to sell their iome-produced microcompute software to other users.

The Local Authorities Manage-

nent Services and Computer Committee (Lamsac) is recommending that a publishing house for nicrocomputer software packages written by local councils be set up o sell them to other councils and even to users outside.

to co-operate," said Roy Barnes, Lamsac's proposal comes in a report which completes the last phase of a long enquiry into the impact of microcomputers in local government. The main concern is Lamsac director. "There are ove 3,300 different applications on all sorts of mainframes and other Turn to back page o make the most of existing facil ties, so that the £22,000 million local government will be spending this year will be used effectively.

Over 200 mainframes and more use in local government, says Lamsac. The committee is funded half by local authorities and half by central government, and provides paid consultancy to councils which call on it and also funds research....

use of information technolog through the use of microcomputing will produce an increase in the efficiency of local government.

says the report. Lamsac recognises tha microcomputers have boosted the demand for applications and goes on to recommend that co-ordina-tion of buying-power, facilities and existing resources should take

NEWS BRIEF Rate support 'time' cost govt £240,000 THE estimated cost of computer time (usage and storage) incurred by the Department of the Environment in preparing the 1982/83 rate support grant settlement was estimated to be £241,744 up to the end

More than £8,000 represented expenditure on the department's own computer facilities, Tom King, Secretary of State for the Environment, told MPs in a written Commons answer.

Viewdata boost

IBM has made another move into viewdata by announcing last week that its UK bureau services will be accessible from viewdata termi-nals. The bureau's processing costs have long been acceptable for a wide range of business applica-tions, according to the company, and now cheap terminals which can be used for several separate services will remove the last barrier to a vast market among retailers and other small businesses.
(See page 3.)

Logabax deal

LOGABAX UK has signed an agreement to market Systime's Series 500 microcomputer. The deal will make Logabax one of the major distributors of the Intel 8086 system released by Systime las

Computastars

THIS year's sports competition for computer users and the computer industry is under way, with the announcement of the 1982 Computastars. Four regional heats, a national final and a Ruropean final are included in a programme spon-sored as usual by Computer Weekly. Entry details, page 16.

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(diphinals with Rapid Récall.

Microcomputer Specialists now the nawforce in Berninals

• From front page

witt, marketing manager for Micro
Rocus, "and we always are."
The facilities provided by Animator are invaluable in testing and debugging, which Micro Focus estimates to be responsible for 67%

Involving a great deal of programming time.

Micro Focus is providing a high-level "harness" for such jobs:
Program creation and maintenance tools are not themselves new, but the difference in these is that they

anguage. They are able to make changes and run the program immediately, with control breaks to examine values along the route.

With a high-level language like Cobol, however, there are tedious steps to be followed in the creation of test dera

cimates to be responsible for 0/70 of programming effort at present.

Assembler and Basic programmers have always had the grammers have always had the cools are portable. To write a high land systems tool in Cobol rather

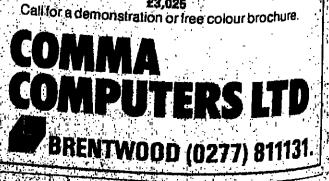
portaging which made all colors popular in the first place.

Both Animator and Slideshow have been written with ease of use, as top priority, and are likely to reach beyond the micro market of test dam, test running and reach beyond the micro market verification, often themselves into large mainframe installations.



Portable debugging

tools are portable. To write a night level systems tool in Cobol rather than assembly code preserves the portability which made CIS Cobol



Printed in Great Britain by QB Limited, Sheepen Place, Coichester CO3 31.J. and published by IPO Blactrical Ricctionic Press Ltd., Quadrant House, The QB drant, Spiriton, Surrey SM2 5AS.

IT must depend on private enterprise, says Minister

by Robert Parry CALLS for a Japanese-style ap-proach to information technology have been rebuffed by IT Minister Kenneth Baker, who insists that

National Bears, who insists that private industry must make the UK a world competitor.

Citing a UK trade deficit of £230 million in information technology for 1980. Baker has told the National Beotomic Development Council that by 1990 the figure



INSIDE THIS WEEK'S ISSUE

Revival in UK micro chip market

alons back new technology.....

Boredom and eye strain for operators......13

dustry in mind."

UK companies held only 1.5 per cent of the world's information technology market excluding

scale it will be unable to compete.

Software File Company News Gilb's Mythodology Downtime by Chad

Letters
Liveware File.
Op Spot

competitive positions.

Baker replied that selectivity was already a feature of the government's approach. Battle of giants Shopping by micro Micro News......

Jobs: Pages 24/47

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to another...

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DP managers further ahead in pay stakes

SENIOR data processing man-agers are winning the biggest percentage of salary increases among computer staff, according

"DP department heads are suddenly getting a lot more than the people they are managing, and this has happened in the last year," says Lawrence Lock, managing director of Management Perfor the survey.

The rate of increases for senior management categories, which comprise management services, data processing, systems and programming managers, as well as project leaders, has not only been above the rate of inflation, but has widened the differentials over their staff, Lock says.

The survey covers 50 industrial and commercial companies in the South-eastern Home counties, but

Median salary of management services managers jumped 33% to £14,000 annually over a 15-month period ending in November 1981. DP managers' pay climbed 28% to £12,750. £12,750, systems and programming managers' pay was 29% up at £12,000. Project leaders had a 28%

programmers, whose salaries soared 58% to £11,025 in the period, all the other "indians" had

company Nokia Electronics, a division of the Nokia group, has

reported a 59% increase in turnover for the year 1981.

Turnover of £96.8 million, com-pared with £60.7 million in 1980,

acks the company's recent push

Although a large percentage of the growth can be attributed to the inclusion in the figures of the

than the chiefs," Lock says.
He also thinks the figures for

systems programmers may be although he agrees they are in high demand.

1981, with the 15-month percenincrease in brackets are: tage increase in brackets are: Senior systems analyst £10,000 (18%); systems analyst £7,800 10%); analyst/programmer £8,300 19%); chief programmer £12,134 (21%); senior programmer £9,000 (18%); programmer £7,000 (8%);

The report also says that 85% of management services managers get a car against 90% 15 months ago, and 36% of DP manager against 41% in the previous survey.

On the operations side the same

trend of widening differentials is demonstrated. Operations manhike in pay to £11,025, while operators had increases ranging from only 5% for senior operators (£6,000) to 25% for shift leaders (£6,600) in the 15-month period.

Data preparation supervisor salaries were up 27% to £6,500. data control supervisors had rises of 32% to £6,420, and data prep and data control ops' pay climbed 48% to £5,328.

communications company, the un-derlying growth in the company

has been about 30%, according to vice-president of Nokia Electron-

vice-president of Nokia Biectronics Kurt Wikstedt.

Exports rose by 110% to £27.1 million from £12.7 million. Much of Nokia's exports, perhaps as high as 42%, go to the USSR.

Sales at the Nokia data subsidiary division, which includes the CII-Honeywell Bull agency and a number of service bureaux, rose by £12.9 million to £43.7 million.

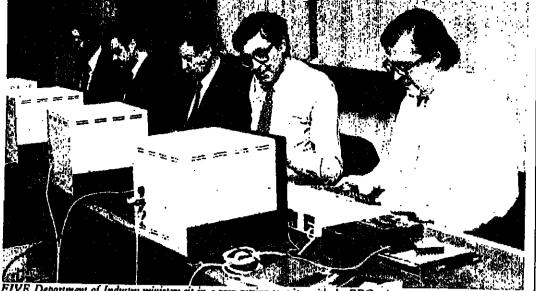
Although no profit figures are quoted for the sister division, Mikko computer its sales rose from £11 million to £14.1 million. This division is spessheading Nokia's drive into Europe and the company has invested £1.5 million in new production facilities for the

in new production facilities for the Mikko.

Later this year Nokia expects to open offices in Switzerland and Holland to complement the drive on European markets which the company launched last year. UK customers include the BBC and British Tissue.

Finnish firm wins

high sales in Europe



FIVE Department of Industry ministers sit in a row getting to grips with the BBC microcomputer. From the right: Kenneth Baker, Minister for Information Technology; Patrick Jenkin, Secretary of State; John Wakeham, Par-liamentary Under-secretary: Norman Lamont, Minister of State; and John MacGregor, Parliamentary Under-

Viewdata campaign aims at business market this year

tion has been singled out as a key growth area for viewdata this year, while mass-market penetration will be tackled in a longer-term ficant results by the end of 1984.

These decisions were made at a meeting last week sponsored by

boost viewdata (Prestel) and teletext (Ceefax and Oracle). It was a repeat of last year's campaign, which was claimed to have got teletext off the ground, trebling to concentrate on teletext," said the Association's deputy chairman Pat Montague. "Teletext has been the sales of teletext receivers. an immediate benefit to the manu-The Association of Viewdata In-

facturers and it is better that one formation Providers was irritated ing a profit," he added. This year, the initial decisions have included the plan to continue concentrating on the business sector and to begin a longer term

strategy leading to a mass market operation by the end of 1984. Teletext will continue to be promoted this year and October will once again be declared National Teletext Month. Plans for this year include an expansion of experiments in which the BBC and IBA deliver telesoftware to schools via their teletext broad-

year include promoting the rapid growth of new business applicanons, working out how to package a viewdata service to make it at

Viewdate and teletext chip maker Mullard, which is part of Philips, is using viewdata in-house and expects to give all its sales engineers a terminal at home this year for technical information. Managing director Ivor Cohen claims Mullard has 95% of the world market for viewdata and teletext chips. "There is hardly a set in the world in production that doesn't contain chips made in the doesn't contain chips made in the UK," he said.

British Telecom information services chief Richard Hooper said there were now 16 suppliers of pri-vate viewdata systems in the UK and that of the 200 viewdata services installed worldwide 150 were from the British private sector.

CII-HB reports huge loss by Kevin Cahill LIKE several other Europe

has pushed up turnover, burth expense of profit, which college from last year's £16 million as loss of just under £40 million.

the sudden and dramatic is profit on a sharp increase in fi

cheap in data processing terms and the spread of teletext sets is educating the public in the use of computer-type systems, he said. Making the applications on IBM's system appear simple had provided a real challenge for the de-

The grand total debt on CI-

CII-HB to 19% or less.

This would dilute Honeywell share, and possibly avoid having the

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COHEN Mullard's latest viewdata module is only two-thirds of the cost of last year's.

100,000 circulation - the highest ABC figure of any computer

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WIKSTEDT large turnover Scandinavian countries towards increase for Nakia in 1981. the end of the year. High tech home soon

by Philip Hunter

A SHOW house containing the domestic technology of the future is being built in Milton Keynes as part of the information Technology Year binanza.

The house, which will be a sinndard four bedroom executive dwelling, will incorporate features of high technology expected to be available in the home by 1987.

It is being developed by the distance of the home by 1987.

It is being developed by the spanning technology expected to be available in the home by 1987.

It is being developed by the fifteenwood Construction considered under seven beautions such as voice and intercepting provided by London based consultant Butler, Cox and Partners which has done research.

The technological development is being considered under seven munications such as voice and intercepting provided by London based consultant Butler, Cox and Partners which has done research.

The house, which will be a sinn care of Butler Cox.

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Software Editor Glare Geoding Micro Editor Bobert Perry

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February 11, 1982

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VIEWDATA is to be the vehicle which will bring IBM's bureau services to the mass of small businesses in the UK.

Launching the viewdata facility last week, marketing programmes

manager Barry Aust said that al-though costs had been falling by about 25% a year, two factors had

prevented data processing services from being more widely used: they were perceived as being so complex as to require specialist skills, and they required prohibitively expensive terminals.

Viewdata terminals are very

IBM's service is a Prestel looks-

like, using the same screen layout

and keying conventions wherever possible, but it is fully interactive, enabling files to be updated as data

to attract small firms

types of information from the same set of files and only allowing some

It is part of the TBS Terminal

Business System running on an IBM 370/168 at the company's Warwick computer centre. TBS is

designed to provide normal accounting and business services interactively at pre-set times.

The centre is accessed via a packet switched network with

seven nodes from Glasgow to Bris-tol which also provides access to

The network is based on System

7 minis, three of which have been upgraded to handle viewdata ter-minals. The rest of the network is

to be expanded to 12 nodes and upgraded to handle viewdata by

Commercial service is due to

start on April 1 and until then the

company will run trial applications

with selected customers.

the end of the year.

levels of access control, allowing different users to view different types of information from the same types of information from the same

present cars and work out the

monthly payments for different deposits and payback periods.

Another pilot user is a

£50,000 a year for a system with 15 to 30 terminals using it.

computer companies reporting nual results this week, Prailmanufacturer CII-Honeywell B.

Turnover at CII-HB, in which US-based. Honeywell is current negotiating with the French precrument for a reduction in its 8% stake, rose 16.6% to £663 million. The company lays the blame by

to finance the growth is size.
With European interest rate is
the high teens all year, this mean
that a combination of increase
inventories, debtors and an aggresive investment policy left the
company saddled with very lay
debts. The company blamed the and

to borrow on "serious under-out alisation." In the context of its negotiations between Honeyad and the French government of compensation terms, this is seen a direct criticism of Honeywa, which it is implied did not inter

enough in the company, thereby forcing it to borrow excessively.

The other shareholder in ClliB, giant industrial conglosses St Gobnin, is already in the finite stages of nationalisation, so the criticism becomes less relevant.

HB's books is now estimated at £415 million, which makes its fances worse than ICL's at the time of ICL's problems last year.

Honeywell itself recently start that it aimed to reduce its start.

This would enable Honeywells
avoid showing the CII-HB loss against its already suffering

Given the under-capitalists state of CII-HB, the French sor ernment may achieve the reduction of Honeywell's state by investing more money in CII-HB.

make any cash payments.

Spokesmen at Honeywell would not comment on the Cli-His

tors feel that the final outcome tors feel that the final outcome of the negotiations may see the of-marketing agreement under which CII-HB was the Honeywell aged in France, Germany and Scandar via break up, and Honeywell out more undertake its own ass

keting.

Last year CII-HB employed a

additional 1,800 people to bring a

total workforce to 21,000.

HUNT . . . the software market is booming at both ends MSA flying high with profits 40% up on 1980

ONE of the largest software suppliers in the world, Management Science America, has announced results which top 1980's ligures by over 40%. A is still on the acquisition

trail, and has just bought manufac-turing software specialist Arista, as part of a campaign to broaden its

There are still rich pickings to be had in the IBM software market, as supported by vice-president Michael Hunt's report of a World wide turnover of \$73,139,000 and a profit of \$5,487,000 after tax, compared with \$53,724,000 and \$2,912,000

MSA's recent growth has been carefully planned, and Hunt be-lieves that MSA is not in danger of with \$53,724,000 and \$2,912,000

last year.

MSA itself has spent a lot of its income from the share issue on broadening its product line, spreading from its traditional role of selling financial software into reash such as microsoftware into Peachtree, acquired by MSA last luly, which supplies similar software for microcomputers, turned out to be a good investment when IBM picked its applications for use having its own products in competition with one another. Although the microsoftware provides a relatively small revenue at present Hunt expects it to bring in a quar

MSA is geared up for the new SSX operating system offered by IBM with the cheap 4321, a "cutdown" of the 4331, and deliverie

on the IBM Personal Computer.

Arista was attractive to MSA because of its solid IBM experience

about 80 people. It specialises in such applications as manufactur-ing, control, material require-ments planning, inventory control

forecasting and capacity planning

The area is a new one to MSA

but as Hunt pointed out, an im-portant factor of the purchase in his company's wide distribution

IBM boosts bureau business in the UK and reopens its US service in the teeth of AT&T Viewdata used as bait Scene is set for a battle of giants

A RETURN TO remote comput-ing services with an emphasis on coast to coast networking facilities has been announced by IBM in the

The move is likely to bring the computer giant into immediate confrontation with American Telephone and Telegraph, which has given the go-ahead to its Advanced Communications Service, the packet switched network it first talked about some years ago. IBM has run a bureau service in

enter goods received and takings daily and the stock position weekly. Another is a financial company which has more than 3,000 overseas contacts. the UK since early in the Seventics, but in the US it was IBM plans no involvement with forced to sell its business in 1973 to inform customers of the range of features available. Pilot customers are using terminals from a variety Control Data in settlement of an antitrust suit.

By re-entering the field, which of suppliers, but all have chosen

the court decree prevented it from doing until 1979, IBM is pitting itself against US industry leaders Control Data, Geisco, McDonnellcolour sets and full alphanumeric · Simple systems can be got running in three weeks and cost from £2,000 to implement, while complex systems could take four Douglas Automation, Tymshare, and National CSS. months and cost £50,000. Running costs could range from £15,000 to

The US remote computing service market was some \$4 billion last year, and is expected to grow at 15% to 20% annually, according

There will be no immediate effect on IBM's UK bureau service, although it does raise the possibility that the UK service could be linked to the US network. Called the IBM Information Network, the US service is not bureau, but a data processing and network facility for customers to

access to IBM program products and productivity tools, a service akin to the VM Service Productiv-ity Service which is available from the UK IBM bureau.

perform their own tasks at remote

AT&T's ACS is expected to start later this year. While ACS will probably move towards add-

tions processors to its network.
Washington-based ADAPSO the Association of Data Processing Service Organisations — said it might oppose IBM's plans if it ap-peared that IBM was unfairly subsidising the new service. IBM's network for the new ser-

vice consists of several 3000 series

wait for **BBC** micro

THE sorry tale of the Acorn/BBC microcomputer continues with more confusion over when the

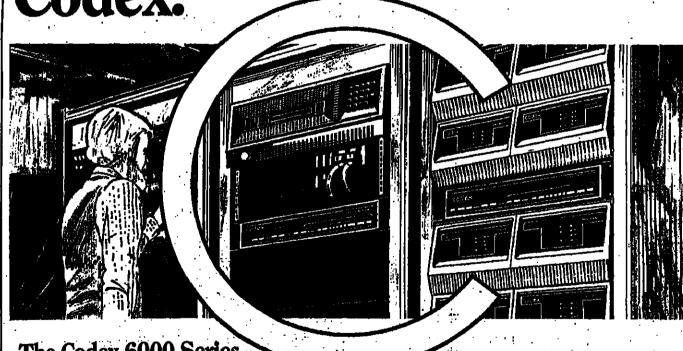
The first television programme in the series that the British-built machine is designed to complement was shown a month ago, and Acom managing director Chris Curry expected then that all the orders would be met in March. He is sticking to this, but the company handling the orders, BL Marketing of Kettering, is telling people not to expect delivery before April.

The BBC puts this down to caution, on BL Marketing's part, adding that everyone was working to

ing that everyone was working to the same delivery dates, but in-terpreting them slightly dif-ferently. This extends to expected delivery dates for machines ordered once full production is

Curry says the lead time will then be about three weeks. BBC Enterprises is less precise, preferring to wait and see what happens when full production rates actually arrive.

More intelligent Intelligent Network Processors from Codex.



As usual. Codex are well ahead of the rest of the field. This time with a family of INP's which offer a distinctive turnkey combination of cost/performance characteristics and flexibility for communications in a multinode data network. Configurations of up to 16 nodes can be supported, with multiple high-speed links maintained between nodes. All will complete user transparency.

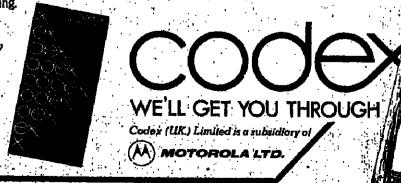
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by Donald Kennett
A SERVICE which would enable
microcomputer users to log on and
order brand-name consumer goods from the cheapest source, irrespec-tive of which country they are sold in, is Walter Forbes' target for his US-based company Comp-U-

up companies to operate the service in the UK, Germany and France and has already licensed Japan's tenth largest retailer, UNY

In the US, the service has been to the 50,000 microcomputer users that access the Dow Jones, Com-puserve and Readers Digest's Source Information services and Forbes is working on deals with cable television companies experi-menting with two-way cable based

Comp-U-Card's service is based on a database of comparative price information which it has made available to subscribers since 1973 through telephone sales staff. Initially computers were only used in the service to compile the hocket ally computers were only used in the service to compile the books that sales staff used, but three years ago the staff were equipped with terminals online to the data-

This enables them to supply information on 30,000 products to over two million subscribers.

Variations on the service include Comp-U-Claim, which is designed to make information on the cheapest sources of replacement goods available to insurance

Burroughs sells first advanced office systems

AS a clearer view of Burroughs' gins to emerge, a firm of unnamed London solicitors is set to be the first company in the UK to install a complete version of Burroughs content addressable Office Information System (OFIS).
With chairman Michael Blu-

mentahal going on record as saying half of Burroughs' revenues will come from office automation by the end of the decade, there seems to be some "method in the mad-ness" of Burroughs' takeover of

The heart of OPIS is a content addressable electronic filing cab-inet. The future of that device, which is compatible with the computer systems of Burroughs' major

The firm of London solicitors whose name has not been revealed while final details of contract are completed, is ordering between £3 and £4 million worth of equipment to include some 100 secretarial word processors, 50 enquiry termi-nals, and 50 managerial worksta-

OFIS product manager Ian Murdoch predicts that 30 to 40 complete systems will be installed in the UK this year, but many

clude word processors, an optical character recognition page reader, professionals' terminals, workstations, communications processors, and the OFISfile or electronic fil-

That users do not have to buy the whole package, but can buy cial to Burroughs' attempt to reestablish its once premier position in the office automation market. linked to Wordplex terminals. The Swiss Banking System will also install OFIS and ICI, whose Canadian subsidiary was one of the pilot sites, is looking closely at the

Murdoch claims that OFISfile gives a "totally new domension to filing," putting access to computer databases in the hands of end users ather than data processing man-

extraordinary interest in the product, and the UK police at the Police National Computer Authorities Centre is another possible customer. Authorities have said that OFISfile I, which can store 160 Mbytes or 80,000 A4 pages of data, could handle all but a small percentage of police inves-



MURDOCH . . . Burroughs "new dimension to filing."

OFISfile, and what separates it from the more expensive and gen-erally mainframe-based content addressable devices from ICL, IBM, and Datapoint. While the actual algorithms used in the software remain proprietary, it is a combination of inverted filing and niques which cut down the usual overheads needed in data storage. Cost of 160 Mbyte file cabinet is

some £40,000, and it can be hooked to any of Burroughs' range of communications controllers costing from £9,000.

way, and Murdoch says a two gigasystem will be available next year. He also said that Burroughs' local area network strategy would be announced by the end of this year, and it would conform to whatever standards had been accepted internationally.

Other OFIS products will integrate voice and video transmistions, and digital facsimile will be iinked directly into the system by the beginning of 1983.

WOODS Management senses London has gone to Hoardin its third upgrade. This time DPS 8/44, due to be institute September, and it will rus at VDUs and six disc drives and The company switches Honeywell in 1975, when kits Level 62, and upgraded to 18 64 in 1978. Software deals

More from NCK LONDON-based buren le Computer Services has institled NCR N-8455, which has the over applications previous a on two NCR Century 75. But that they were run on 1 Can 100, installed 10 years sp. let because of its extensive network, selling financial sing of data pre-processo and administration packages at £250 each under the UK policy of

microcomputer and the Philips P2000 range, to be marketed shortly by Philips itself.

2,000 packages are scheduled for distribution in the first quarter of this year. In addition, Currys chain of Micro-C stores is to sell SIM products for the Apple, and Bean Business Centre, part of the Unilever Group, will stock the software packages in its 10 business centres.

Widening

operating systems.

Signs of revival in UK micro chip market

French govt cash aid

Barclays

comms del

DEC has pulled of a contract which will contain latest phase of automa latest phase four PDP-lis brordered four PDP-lis branch controller in a controller in a

branch controllers in a play

munications project wide lead to the installation of systems in all its 2,200 brade

The controllers will had communications with a branch and provide lists bank's private telecommunications.

£8.3 million on

GEC Telecommunications won £8.3 million worth of all for digital and analogue man

ers, de-multiplexers and use sion equipment from his Telecom. The equipment of 140-megabit-per-second second

which put 1,920 telephor nels on to a single circuit.

Exploring

SEISMIC exploration m

SEISMIC exploration and processing company Medial physical of Woking has admit Univac 1100/62 multiport system. It will work with a religious Point Systems APM ray processors on data from exploration vessels and from oil companies. Merilin also parties where underground amount of the processor of the processor

develop underground saw ware to sell packaged with

Third upgrade

WOODS Management Service

SIGNS are appearing that the depressed UK microelectronic components market is starting to pick up, particularly at the high technology end. Despite a slump in sales and

profits for Unitech, one of Britain's major distributors of microelectronic products through its subsidiaries Rapid Recall and Celdis, chairman Peter Curry feels the worst may now be over in the

distribution business, who see confidence returning to the market.

Unitech's profit for the half-year to November 28 fell to £1.47 million before tax, a drop of 38% on the corresponding pagind of the

the corresponding period of the previous year. Sales are 11% down. The group manufactures electronic components and equipment as well as marketing semiconductor components and systems in Europe and the UK, but it is felt that the distribution side of the business suffered most.

other European subsidiaries.

John Weatherhead, managing director of Rapid Recall, says that in the computer products side of the business, there is now

Growth had slowed, but book-

ings went well over the past few months and billings were growing slowly, he said.

Ray West, Celdis' managing director, is cautious of predicting market improvements, although Celdis' business has moved ahead "by leaps and bounds." He feels that the market is less pessimistic. that the market is less pessimistic. but that the company's good performance is due more to increased market penetration than to an increasing market.

Customers are starting to pull forward schedules and distributors are having to place orders further ahead to ensure a place in the supply pipeline. "People are mak-ing a long-term commitment rather than living from day to

times. West estimates that for high technology products they have increased by two to three weeks over the last month, and if things do improve he foresees a "massive" rate of change.

The mix of products selling well, is also changing. West sees a move to bigger memories in parti-

Bill Carter, a product manager at Thame Components, also notes this trend, adding that 16-bit

ning to move well.
Thame's level of business starting to increase slowly after a very flat year or so. Interest from customers is increasing more rapidly. "It's very busy out there, and we have a lot of activity on the phones," says Carter. "We will be back in action again in the second half of the year."

by David Craver
ONE of the major distributors of
components in the UK is breaking
into more traditional DP markets

And by playing on the techniques it has learned in the components business, Rapid Recall hopes to change people's thinking about

Terminal sales now

the buying of terminals, Rapid Recall likes to regard itself as the Marks and Spencer of 200 units a month. distributors for its terminal

Until now, he asserts, most terminals have been sold by entrepreneurs with a "get the cash and

the industrial components distri

butors, according to managing director John Weatherhead. He in

tends to sell terminals with the

same level of support and service that is demanded in the compo-

Rapid Recall already supplies Digital Equipment terminals in large quantities and in the next two years Weatherhead expects turnover from the new division alled Rapid Terminals, to be over £2 million annually.

Total sales of High Wycombe

based Rapid Recall are running at over £10 million for the year ending in May 1982, most of that com-

million, so growth has not been at the 50% rate Weatherhead says he appointing authorised distribu "The distributor is coming of age in the high technology area," says DEC's Edgar Valentine, UK marketing manager of microproducts and terminals. Rapid Recall has been used to since the com-

COMPUTER WEEKLY, February 11, 1982

pany was formed seven years ago.
"The recession really knocked
us back," Weatherhead claims,
but he looks for better results in
1982, with sales of about £16 milwas named last April as the sole UK distributor of DEC microcom-

Later this month DEC will

WEATHERHEAD . . . Marks

Rapid Recall bid to 'change

thinking' on terminal buying

distributors which DEC is ex-pected to name include Zygal, By-tech, MBS Rentals, and Abacus. Some eight commercial OEMs have been appointed by DEC over the past year.
The role of the distributor in the

puter products.

the user's attention on the selling of the features of equipment rather than the "bits and bytes", Valentine suggests.
Rapid Recall plans to sign

The other authorised termina

rangements with other major ulacturers over the next six to nine months. And continuing the move into mainstream data processing, Weatherhead says plans are afoot to get involved in software and systems products.

'26-hour week in the year 2000'

by David Craver
UNION pressure is mounting for
the government and other major
employers to sign agreements on
the introduction of new technology, with the Civil Service
unions and the Banking and
Financial Union at the forefront of
the battle.

But Terry Duffy, president of the Amalgamated Union of Engi-neering Workers, has again made clear that it is not the technology, but the way it is implemented, that is causing the unions concern.

"Resistance to the introduction of new technology will damage our opportunity to create wealth that is needed to improve society", Duffy writes in Inducon's survey on the use of robots in UK industry (see

come more multi-national as a means of co-ordinating action. Duffy suggests that the working week could be reduced 10% every five years. That would bring 4 26 hour, four-day week by the year

Reduction in the working week is at the heart of the campaigns by by Ref. Seedesex 1 the heart of the campaigns by the Cril Service unions and proposition to the introduction of paramace of pobs as the banks and sover an agreement increasing the companion of the introduction of some weeks over an agreement successing the Cril Service, and the beauting union agreement consultants industrial unions have been some soft and the Cril Service, and the beauting union are stepping up that considering the temperature of the annual pay that and completing effectively with the Cril Service, and the beauting union are stepping up that completing effectively with the Cril Service, and the four source of successive and the critical service and the critical service and the successive and the critical service and the critical service and the four successive and the critical service and the critical service and the critical service and the successive and the critical service and the four successive and the critical service and the critical service and the successive and the successive and the critical service and the successive and the successive and the critical service and the successive and the successive and the critical service and the successive ande



Unions back new technology

signed

idening the market for its software products by signing agree-ments with Rank Xerox and Philips Business Systems. Until now it has concentrated on the

w-price high-volume sales. Now its software packages will Soroc dropped SANDY-based Trivector Special has dropped the US-made of VDUs and special for 100,000 OEM agreement in Newbury Laboratories for made Newbury 8003 VDIA made Newbury 8003 VDIA will be supplied with its Time will be supplied with its Time multi-processor microcompany.

Series 44 and includes a grad Series 44 and includes a grad accounting package from Gas ware, as well as HP word prod aing and business graphics as ware. It will be linked to the

multi-processor microcomp.
The company also plans #1
150 Newbury 8005 graphic #1
under a second contract.

Energy system

THE UK Atomic Baciff Authority has ordered a Print

for Intertechnique will pump in 85 million francs (£8.5 million) of which 61 million francs will be subsidies and 24 mil-

In return Intertechnique w dertakes to increase its turnover b an annual average of 40% and ir

crease exports by between 35 an

Maillet said this plan had the blessing of all Intertechnique part ners, including himself (with 13% stake) Marcel Dassault Air

craft Corp (31%) and the Rivauc

shall not sacrifice profits

Maillet emphasised that Ameri can business methods must be applied. "This is imperative whe facing trans-Atlantic competi-

banking group (18%).

by Jack Gee
FRENCH peripherals company
Intertechnique has received a large
injection of cash from the French
government, indicating a significant role for it in the country's

emerging plans for a centrally coordinated computer industry.

Jacques Maillet, president of Intertechnique, said in Paris he was
confident that privately-owned
Reach computer forms still had a 40% as well as creating new jobs. It will increase its capital by 30 million francs and reinvest each year out of its 1981, 1982 and 1983 French computer firms still had a bright future in spite of the nation-alisation of his company's leading competitors.

Maillet reported that the

Socialist government has promised that it will not confine orders for computers to State-controlled

Intertechnique chairman said the Minister for Research, Jean-Pierre Chevenement, had signed an automatic office equipment contract with Intertechnique involving investment of 418 million francs (£40 million) between

Maillet added that 250 million francs (£25 million) will be devoted to research. The government more securifice profits to growth. Without good manage ment you are bound to be penaltised by market laws sooner or later."

DP industry slowdown by Jack Gee PRANCE'S computer and PRANCE'S computer and by Jack Gee
FRANCE'S computer and electronics industry showed slower growth last year — 17% compared with an annual average of 25.6% over the three previous years, industry leader George Boudeville sald in Parle Leavern Boudeville french and foreign government customers. Foreign orders continue to represent half of turnover produced by the 53,500 workers in the industry.

over the three previous years, industry leader George Boudeville said in Paris last week. Boudeville, president of the SPRR Federation, said turnover increased by 19.1 billion francs (£1.9 billion) in 1981 compared with 16:3 billion francs in 1980.

But he added: "This pause is only relative. Orders for 1981 total only relative. Orders for 1981 total as hew level of expansion."

Military, orders accounted for the workforce has been increased the creating at an average of 4.2% an unually since 1979 with an increase of 7.8% for engineers and executives, 6.2% for technicians and only 1.1% for workmen.

Boudeville said: "Demand for engineers and executives is so strong that certain jobs will remain vacant." Boudeville, president of the SPRR Federation, said turnover increased by 19.1 billion france

The workforce has been in

Military orders accounted for vacant.

Japan acts on privacy

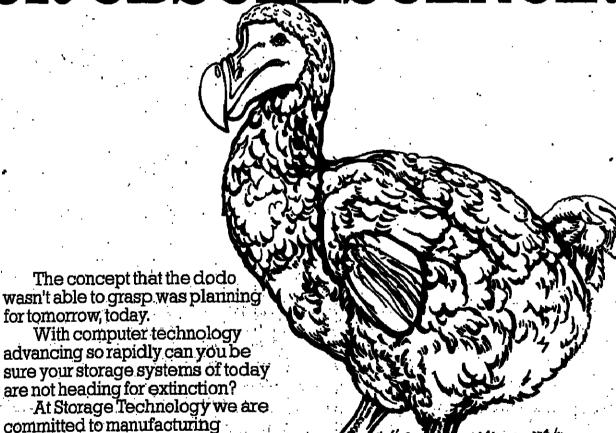
The Japanese government has in excessive quantities of informativasion of privacy and is committed to implementing guidelines of privacy protection and internatival transfer of personal data, as for Beconomic Co-operation and Development.

their computerised society resulted in excessive quantities of information, and more than half felt that privacy violations were increasing.

• Iceland has also established laws on data protection and these, like those of Norway, prohibit the export of private data collected at home.

JAPAN is expected to introduce a policy on computer privacy in the their computerised society resulted their computerised society resulted

EVOLUTION OR OBSOLESCENCE?



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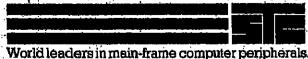
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BRITISH Telecom is bypassing its normal supply channels with a plan to use its own laboratories to manufacture a specialised terminal system for City dealers.

'This doesn't herald a new era of BT producing its own equipment on a large scale, 'a spokesman said, "although there may be other cases if it is cost-effective and there is no comparaole product on the market."

The system, called the City Business System, consists of a touch-sensitive screen with two elephone handsets for each dealer position, linked to a wall-mounted controller capable of providing up as many as 1,000 telephone, telex or data network lines.

It is claimed to be the first of its

complete deskful of lamps and buttons, is less fault-prone and it cuts masses of wiring down to three pairs between each desk and the central wall-mounted unit, the spokesman said.

By touching the control squares on the screen, the user can make, hold and release telephone calls, receive telexes or access information held on Prestel or other inhouse or external computer systems. Using a plug-in type-writer-style keyboard, messages can be composed or amended on the screen and up to 5,000 pages of information can be held in the

The system will be made at a BT laboratory in South London and sell at £6,000 per dealer position. The first delivery is due in March and BT will show the system pubkind in the world and was developed in-house after deficiencies in existing systems became in existing systems became

Universal into Ulster

by Donald Kennett
UNIVERSAL Computers is to sell
its Ultimate range of 16-bit minis
to Northern Ireland through the
Midland Bank substidiary Northern Computing. And Universal's
managing director, Nick
Drescher, is lining up manufacture.

Pick Associates in the US. Northern will be able to sell its interactive software products to users who have outgrown the bureau service and offer them an alternative source of hardware with locally-based support.

Three machines costing a total Drescher, is lining up manufactur-ing facilities there for a compre-hensive communications interface currently being tested in prototype form in the UK.

Northern Computing operates a bureau based on 16-bit Reality minis from Drescher's former em-

Pick Associates in the US. North-

der the agreement, two from Northern itself, and the companies believe the deal may cover sales of

Three machines costing a total of £300,000 have been ordered un-

The communications interface

A NEWLY-FORMED independent software house in the UK is

worth £500,000. based in Surbiton, Surrey, has al-ready clinched distribution deals with Tandy in the UK, and ready microsoftware supplier Instant Software in the US, for its first

release, a general ledger package. Sales for the system have taken

house strikes it rich

Independent software

European sales in the first year. finding a world market for a range The reason that Tandy and of business software packages others are so keen to do business which has already won orders with The MicroComputer Business is the amount of effort which has gone into quality control and documentation. For £359 (\$700) the company is promising to de-liver something which is foolproof, easy to use, and sophisticated enough to permit tailoring.

The company is swimming against the tide towards total software portability in that the soft-Tandy hardware and operating

transfer the concept to the Com-modore 8096, the IBM Personal

Computer and other 16-bit kit.
"Tinkering with the operations and system software is time con-suming," said John Coyne, mar-keting director of The MicroComputer Business, "but if we didn't do it we'd have a mediocre product - having a message on the screen to tell you to switch on or plug in

Coyne and his colleagues, Hel-muth Precricks and Phil Kellingly, have put their individual expertise as well as their own

Intel to sample two micros by 1986 16-bit chips 'by July'

In a bid of microprocessor market, Intel will be sampling two new 16-bit processors, the iAPX 186 and 286, in June or July this year, with production quantities following production early in 1983.

THE world market for b

super micro systems will at \$5.5 billion by 1986, according report published this manh.

The report,* from Calar based ITOM Internations

fines the super micro as t per

purpose computer system to out-performs a PDP-11/45.

"Super micros will displace general purpose minicome and dedicated systems in many

plications," says ITOM protest

seven years ago, people into one is laughing now."

Serlin says mini manaharas are already feeling the effect of super micro. Sperry has king field, and NCR and Burrough signing OBM agreement as super micro suppliers, of the there are more than 50 in the salone. The majorin as the

alone. The majority are a concerns, but IBM, HP, lad, Zilog are also involved.

The report confirms that he number of super micro make turers are offering Unix und

in 1986. Over this period worldwide installed base vil

crease to 615,000 units, of the more than 375,000 will be be

PHONE

101-661 3500

that is starting to take off as products using 16-bit processors move out of the design phase and into production. Intel's own 8086 is well up there, partly by virtue of having been around for some years, but others, Motorola's 68000 particularly, are rapidly gaining ground, in terms of designs using them if not in numbers of devices shipped.

The 186 is essentially an en hanced version of the 8086, and Intel does not expect existing 8086 users to have much difficulty in

adapting to it.

The 286 is considerably more complex, and includes on-chip memory management, virtual memory address translation and a multi-level memory protection mechanism. It supports 16 Mbytes

with the 8086 and 8088 processors, but runs up to six times faster.

All this takes up space, and there are 130,000 transistors integrated on to the processor chip, space, and protection. Typically nearly twice as many as on these would include systems for nearly twice as many as on these would include systems for Motorola's 68000 - seen by many telecommunications, real time as the most exciting of the current crop of 16-bit processors — and over five times as many as on the 8086. (At about \$230, it also costs over five times as much as the 8086.)

Some \$4 million was spent on developing the iAPX 286 (or 80286 as it is also known) according to Intel's microprocessor marketing manager Jeff Miller.

announced immediate second source licences for AMD and Siemens, two of the 8086 alternate sources, in an effort to tempt po-tential users and give them confidence to design products using such a complex part.

protection features give hardware-enforced access protection to each user's virtual address space.

multi-tasking systems

of physical memory (compared with the 8086's 1 Mbyte) and a virtual address space of 1 Gigabyte. It is software-compatible acceptance. Code for these can be acceptance.

The device is aimed at applications needing speed, memory

Operating system software will become available towards the end of the year, with Intel's iRMX-86. Third party systems are talked of, with Miller indicating that MP/M or Unix were possibilities.

"The strength of the 80286 is putting functions — as many as possible — on silicon," says Miller, adding that it is the first device to be specifically designed for distributed processing, multi-user,

More than just a game

more than play games on their Sinctair machine but are not quite sure what, there comes a range of interfaces from RD Laboratories to connect the micro to the real world.

Modules the size of an audio cassette box plug into a motherboard, Super-mum or Micro-mum depending on capacity, allowing logic or analogue input and output and, for interactive graphics, use of a light pen.

Possible uses seen by Hert-

for the RD8100 system range from displaying multiple process parameters on a mimic diagram to checking out hi-fi equipment, monitoring audio waveforms and ware control.

The modules are operated by

simple Basic instructions, mainly Peck and Poke, but can be code instructions. The motherboard reserves a block of 256 addresses which is then

Assurances that NatSemi had corrected its testing procedures for military parts were rejected, and production of about a fifth of its nilitary products will have to be If systems manufacturers move

elsewhere for their components, things will not look healthy for the

one of the sectors in the semiconductor industry not subject to severe price erosion, and is weathering the current reces-

Micro is immune to office pollution

the tiny underwriter's workspaces on the floor at Lloyd's of London. The main problems were a fluc-

tusting power supply, cigarette smoke and vulnerability to user abuse through having no permanent operator, according to Bob Suttle, marketing director of Task Rusiness Sustanta the Dorking based software house that designed "We used Mainstay, a standby power system that provides a clean

mains supply to get round the power problem and designed an dr-filtered steel cabinet for the

tive of Unix, the portable time

. The application software w

the computer include the administration of the box, underwritin records, re-insurance and clair

theres are offering Unit a character prime operating system an alternative, despite the chiral levelled at it in a survey publicated by the character of the ch The report predicts that ear of super micros from the US go from 20,000 this year to US by Maggie McLening SPECIAL protection against pollution had to be designed for a microcomputer installed in one of the time redeministic of Peterborough. The operating system is Unifiex, SWTP's deriva-

sharing system for 16-bit

originally developed for Graham Wilet, a leading aviation syndicate, and will allow the underwrite, marketing director of Task ing business to be expanded with out the need for additional floor

computer to avoid exposure to aticky fingers. All of the controls are inside," explained Suttle.

Equipment used is a 6809 processor unit with a 40 Mbyte Winchester disc, five VDUs and a ment Services four years ago.

Rockwell wins CPU contract

US semiconductor manufacturer electronic devices division, has Rockwell has won the primary revealed that 6502 processor chips contract for the CPU chip in the are being supplied to Matsuhita's radio division, which is manufactured with the computer radio division, which is manufactured. Howard Cotterman, devices seneral manager of Rockwell's Japan. for rent or sale militon Rentals Limited Amiliton House North Circular Road London NW10 7UB ondon 01-961 6777 imingham 021-236 3561 lanchester 061-848 8338/8434

Defence Dept bans **NatSemi** THE US Department of Defence has struck National Semiconduc-tor off the list of approved suppliers of electronic comp for military applications.

COME OF THE WINDLESS, PUBLISHED 11, 1702

NatSemi, a major US military supplier, admitted taking short-cuts in the reliability test procedures required for military parts after receiving a subpoena from a Federal Grand Jury in San Francisco investigating the certification and testing of military semicon ducting components.

by Robert Parry

The market for military devices

Relational Proven RunningDatabase ON OVER 30 different tanges of maintrames System. and minicomputers. A version is Over 70 installations in Industry also available for micro computers. Commerce Government Relational and Research. Databases are easy to understand They reduce to use. for Database users and administrators They are simple to meet new requirements. The new APPORT Provides fast the necessary facilities for updaling of data. oimple formande for nee isnow available offering many extra

£500,000 a year. minis from Drescher's former employer CMC, as well as on two Ultimate machines. All their equipment runs the same Pick operating system, written by Dick

I ne communications interface will handle viewdata and other protocols. It will be made in Northern Ireland to take advantage of grants and other facilities operating system, written by Dick

I ne communications interface off so fast that the company is setting up European and US subsidiating for German and Benefux rights to the product. The company has re-

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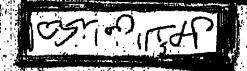
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Comal ready for further inroads into UK market

COMAL 80, the structured Basic teaching language widely used in Scandinavia, has strengthened its will be available to users in about "Some of the trouble in getting it accepted in the UK is because articles have been written about it foothold in the UK market with the news that Commodore and Gemini Microcomputers are to

provide extended versions.

A limited capability implementation of the language is already in use in schools throughout the UK, used on the Commodore Pet and on a Danish microcomputer called the Piccolo. The Irish Department of Education, however, has adopted a full version of Comal as the vehicle for its scheme to subsidise microcomputers in secondary. lise microcomputers in secondary Nascom II or on the Multiboard a education, and it has been the moment, but we plan to offer i

A year ago, Commodore announced that a ROM board was under development to extend Comal capabilities on the Pet, as the RAM version currently in use leaves only 5K of usable memory for processing, but since then nothing has been released.

"We are now in the processing and is favoured by educationalists."

"We are now in the process of purchasing the rights to sell an messages. It is in use in 90 per cent of Danish schools, and has spread to Holland, Belgium, Germany cal services manager at Commo- and the US.

MILK FARMING . . . Alsos hardware was chosen for its robustness.

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Ayoung scientist takes on the world's most sophisticated data-bank network-and brings

The other company serial by computer specialists, 'said Mo-gens Pelle, of Metanic. "It was, in fact, intended to replace Basic, and Amersham-based systems house

"Our version will run on either a supplied direct from Metanic, the Danish developer, for the Apple.

to users of other Z80-based microcomputers later," said John microcomputers later," said John Marshall, managing director of

and is favoured by educationalists because of its informative error

"There has been discontent with

it should be teachers that are talking about it. Pelle added that a Comal compiler would also be available from Metanic for systems running un-der CP/M before the end of the

Gemini's version runs under RP/M, a specially developed CP/M look-alike operating system for the Multiboard computer. It was designed for cassette operation for first-time users who do not want to use discs immediately, but want to develop CP/M compatible soft-

The space shortage problem encountered on the Pet does not apply to the Multiboard because the version of Comal available from Gemini is overlaid, and 32K of memory is left after loading. Apple counteracts the problem by using the Softcard to give Z80 facilities

I by Maggie McLenin IBM quen language goes public by Claire Gooding

THE relational query larger SQL/DS from IBM is about make its public debut next mode a year after its announcer made the whole concept of rate and databases representable. nal databases respectable.

March will be a critical time i
proving how SQL/DS will use

up to everyday use - paricular in terms of machine performant SQL/DS is a structured quarter language, known within IBM to the friendlier name of Squel was announced as part of IBM to was announced as part of IBM to the friendlier name of squel was announced as part of IBM to the square of IBM to the progression towards giving man power to the end user.

It avoids jargon, using Engli-like syntax and "joining" file in a series of tables which also selective queries to be made, i most like a sophisticated tents

"We have not reached the poin MARSHALL of Gemini . . "Comal where just anyone can sit don and get out what they want: you'd need some training. That the come, but it's not Sequel," sai software marketing manager leb Garnett. At present IBM has SQL/ISi

20 guinea-pig sites world-wide.

Farmer's friend monitors milk yield

commented Marshall, of Gemini. "Comal offers so many refine-

ments and advantages in opera-

A SYSTEM simed at the specialist market of dairy farming is being offered on the Altos microcomputer by Robox, the Glasgow-based systems house, through Lo-gitek, of Chorley, Lancs.

The system is built around a central file of records detailing each cow's lactation history, pro-ductivity and feeding details. His-torical information is held on a database which is updated regularly to pinpoint any trends or changes that might lead to trouble. This should enable the farmer to monitor the herd and avert potential health or feeding problems.

Facts and figures on milk yields are also recorded, and instructions on calving intervals, bull fertility and cow conception rate. Farmers can keep weekly herd records with the package, which claims to offer

FRIGHTENINGLY DELIEVABLE"

IFFREY ARCHER

produce a variety of records and The package was originally developed by R.J. Systems, a software house based in Ayr, for the

beginning of 1981.

The main problem was that computer people know nothing about cows," said Jim Recf. a

It is now implemented on the Altos ACS 8000-2 microcomputer supplied by Logitek, with 6Kd memory, which is sufficient for herd of up to 1,000. The total cost of hard- and safe

ware would be £5,500 for this at of system, but a larger configu-tion would be needed for head up to 3,000.

An additional feature of the package is that it will link with

other electronic systems on the farm, such as one for feeding. "It calculates the exact amount for the animals, and the informtion is passed direct to automa feeding equipment," explained

This is the first system that R. area; until now it has concentrate on domestic retail supplies

SOFTWARE BRIEF

Scheduling saves costs

A TURNKEY stockbroking pack puter is to be marketed jointly by Jackson Associates, the London and Chichester based software house, and ICL under the recently duling offers savings of between 10%-50% on transport costs, according to a report published by the Institute of Grocery Distribution innounced Counterpoint trading

Copies may be obtained from the Publications Department, Institute of Grocery Distribution, Grange Lane, Letchmore Hesth, Watford WD2 SDQ, price £10.

The marketing agreement follows an earlier contract awarded to JA to design and develop the investment management and stockbroker administration system for ICL. Trials are now in progress, and the full system should be available in May. Based on ICL's IDMS database, investment is a system with a dual role: to automate accounting in a stockbroker's office, and to provide up-to-date information on clients for investment and fund managers. MULTI-LANGUAGE capabilities for Hewlett-Packard 9835 and 9845 desk-top computers are offered by a Program Development System (PDS) from newly-formed Protek Electronic, specialists in hard and software ennancements for HP systems,

Tandy edition

managers.

"This is Jackson Associates" first venture into stockbroking; said Robert Hodge, investmaster project manager at JA. "Our main area of interest until now has been in the commodity broking market." TANDY Corp has issued a boo listing application software available for its TRS-80 Models I, II, III, Colour and Pocket microcomputers. The UK version contains over 500 programs written by professionals and amateurs. Tandy TRS-80 Applications Soft ware Sourcebook is available at Three of the packages have already been sold to London stockbrokers by iCL. in the UK, price £3.95.



A rescue plan for Magnuson

FOLLOWING Magnuson's \$10 million loss in its fourth quarter, and the failure of Storage Tech-nology's recent takeover bid, the company is stitching together new plan to raise cash.

The plan, expected to be presented to investors next week, is being prepared in the absence of Joseph L. Hitt, company chairman and president who resigned in the wake of the revelation that the company had made \$10 million losses on revenue of \$5 million in the fourth quarter of 1981.

Following Hitt's resignation, Charles R. Cole has taken over as president and Paul N. Magnuson as returned as chairman.
The company has laid off 140

Company spokesman Bob Stephens said his business plan would be used to raise an undisclosed amount of cash from inves-ters. The company had already received offers of cash, and mmediate funds was not the issue. The problem was to get the company's product strategy right.
Magnuson, which employed

sbout 550 people before the redun-dancies last week had sales for 1981 of \$30 million, \$2.5 million

WITH the financial community in the next few years can be gauged from British Telecom's investment

interest in the computer and telecommunications industry, studies
of this sector are proving popular.

The latest report* is from
stockbrokers Capel Cure Myers
and its author, analyst John E
Clarke, foresees many profitable
opportunities for the telecommu-In 1977/78 BT invested £845 opportunities for the telecommuucations industry in the years

He says that during the 1980s deregulation and technical change will result in a revolution in inter and intra office communications as well as main exchange and trans-

nission equipment.
Clarke mentions forecasts of 9% a year growth for the total telecommunications market, with data transmission equipment deliveries growing at 15% per annum in real

terms.

Clarke reckons that 2% of world gross product is now telecommunications equipment with some dethan 2% of gross domestic product involved in telecommunications

He acknowledges that there is no such thing as a telecommunications industry totally free from regulation, but this does not weaken the case for substantial de-regulation which he sees as introducing a strong measure of market oriented thinking into what in the UK has previously been an industry dominated by engineers and civil servants from Whitehall.

Even without deregulation, however, the scale of telecommu-nications growth in the UK over

million in new exchanges and other equipment. By 1980/81 this figure had nearly doubled to £1,550 million and for 1982/83 the target for investment in new equipment is £2,500 million. The report makes clear that

those massive expenditures will remain firmly under British Telecom's control and GEC, STC and Plessey will remain the key suppliers into what Clarke des-cribes as one of the world's largest domestic telecommunication

> The Third World has 70% of the world's population, but only 7% of total world telephones

One of the prime cases for deregulation is the stimulus it is expected to give to exporters. In the past 20 years the UK's share of the worldwide telecoms

ties are the provision of satellite market has fallen considerably but communications systems and undersea cable links. Clarke still sees enormous oppor-British Aerospace has recently tunities for exports. He says that countries with established indigenous industries

formed a company called Satcom with French military hardware supplier Matra, which will bid for regional satellite communications tend to be nationalistic with regard to the purchase of main exchanges

Looking at transmission equip-ment, Clarke points out that the UK domestic market for transmission equipment is currently worth about £150 million a year, but can be expected to grow rapidly once installations of digital networks ac-celerates during the Mid-Eighties. Clare says the domestic market

COMPUTER WEEKLY, February 11, 1982

for modems and multiplexers is likely to experience further rapid growth over the next five years. It has been forecast that the market for data terminals will be five times its present size by 1987.

Clarke says that in all but the Two key product areas iden-tified as offering special opportunivery long-term, fears about mo-dems becoming obsolete are misplaced.
Looking at the market for attachments to the basic network

Clarke foresees that the second handset and peripheral equipment market will inevitably be the fastest growing.

He reckons that the three main beneficiaries in terms of basic

equipment supply will be GEC Plessey and TMC (Philips-Pye)

by Kevin Cahill

The most far-reaching phase of deregulation is expected to be enacted in July 1983 when BT loses the monopoly right to supply, install and maintain fully digital PABX systems with stored program controls. He sees this product (the digital PABXk), as the key to the so-called office revo

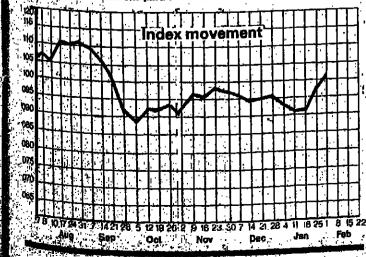
There have been widesprea complaints about getting BT to install PABX systems all of which are obtained from seven approved suppliers. It is felt that with BT no longer in monopoly control of the market, delays in installation and the cost of maintenance will be reduced, the market generally will expand, and BT will be forced to be more competitive.

*Telecommunications in the Eighties and Beyond by John E. Clarke and available from Cepel Cure Myers, Bath House, Hol-born Vinduct, London EC A 2EU. Price on

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sees snows the closing prices of The London Stock Exchange on Thursday and in America in Relateday. The thare index it based on the prices of the UK companies in the table. Highs and the how been adjusted share sneesary.

Shares waded on the Unlisted Securities Morbet or under Rule 163(2)(a).



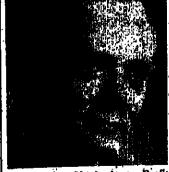
Texas Instruments profits crash 49%

THE severe recession in the emiconductor business and sharp rice cutting have led to a 49% profit crash at Texas Instruments.
Profits for 1981 were \$108.5
million compared with \$216 million for the full year 1980. Sales
rose 3%, to \$4.2 billion.
The company blamed adverse

esuits from semiconductor opera-ions and from the sale of its distriouted computer equipment as the nain cause of the poor results.

Like all other US computer companies the persistently strong dollar was blamed for some of its roubles.
Citing weak demand, intense

competition and sharp price-



TI chairman Shepherd . . Profit

cutting in the semi-conductor in on plant and equipment last year, dustry, the company, which earlier this year laid off 2,800 employees, dustry, the company, which earlier this year laid off 2,800 employees, recently shed another 270 people at plants in Texas.

This brings the total reduction in manpower at TI over the year to just over 6,000, from 89,875 at the end of 1980, to 83,714 at the end of

opportunities for exporting TXE

or System X exchanges to the US

The battleground for European, Japanese and US exporters will be the less developed countries. The Third World has 70% of the world's population, but only 7% of total world telephones.

The prizes are considerable as a

country seldom changes the basic framework of the initial system

once installed, and there are op-

portunities for lucrative consul-

and management contracts.

tancy, supply and maintenance,

or Europe just do not exist.

its chips and with increasing com-petition from American and Japanese rivals, the company has slashed the price of many of its

basic products.

While saying that demand for the company's 64K RAM grew strongly, TI would not comment on industry claims that 64K RAMs were now selling at a quarter the price of a year ago.

And according to a recent fea-ture in the American magazine Fortune, the Japanese have already grabbed over 70% of the emerging 64K, market, leaving little room for real growth to American companies like TI.

TI's operation in Japan, where the company has plants, is doing well, according to chairman Mark Shepherd. In the Far Bast TI's apanese competitors, selling into ven markets, have faced nothing like the slump in the US market.

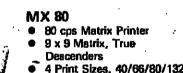
During the year the company launched 300 new products and increased its R&D expenditure by

stream of further new products. While the Japanese rivals are stepping up capital investment, TI has slashed its capital spending budget by almost \$200 million. The company spent \$350 million

16% in an effort to beat its way ou

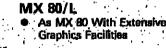
Shepherd remains gloomy about the prospects for 1982. He says that TI sees little prospect of a pick-up in world-wide demand and that markets in the US wil remain soft and trading continu depressed in Europe.

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Superbrain, and 35 of the systems have been sold through Hunday Electronics of Newcastle since the

director of R.J. Systems. "We wrote the package in conjunction with dairy husbandry consul-

marketing

deal

develop application systems for its hardware.

age for the ICL ME29 min

ICL joint

COMPUTERISED vehicle scho

Under the agreement, ICL will join forces with software houses to

Multi-lingual

better than in 1980. CW SHARES TABLE

Operational testing — the only way to cope with those errors

The Seventh Law of Reliability: lieved such extensive (but impos-Undetectable errors are infi-sibly impractical) testing was the

IN an earlier column I illustrated how many unique logic paths a simple (21 statement) program could have — over 93,000 million.

This alternative was to look inside the black box at the program structure "and convince oneself by reasoning. The only problem is This alone makes it obvious that logic bugs have cridless opportunities to hide their irritating grain of

If you thought this was dramatic, then consider the fact that exercising all unique logic paths does not exercise all data cases which could be used to pass through a single instruction. Edsger Dijkstra estimated for a single multiply instruction that there were so many cases necessary that it would take a small computer 30,000 years to generate and

He also pointed out that he be-

10 YEARS AGO I

From Computer Weekly of February 10, 1972

FOUR major computer centres Burroughs launched the L7000 at the focal point of a massive bureau grid were the main feature of a plan developed by the Ministry of Defence. The grid would take over all MoD data processing activities, then handled by about 60 separate computers....

nite in variety - in contrast to only possible alternative as long as that Pagan's inspection method (in detectable errors, which, by we treated the program like a definition, are limited. "black box." common with conventional engineering inspection from which it is His alternative was to look inderived) has about an 80% rate of

much practical evidence to believe

that "reasoning" about the in-ternal structure of a program will

velopment statistics have brought

to light the fact that even with its

thorough testing procedures, the

Recent IBM software de-

detecting available errors. In addition, inspection can catch reasoning. The only problem that the amount of reasoning often becomes excessive, with the sad program coding, in one large US study by TRW). And early catchresult that bugs remain." (Infotech: Software Engineering). ing of errors results in over 10 In short, 100% pre-testing just isn't on. And neither do we have times lower correction costs.

Presently applied techniques do not seem very effective at catching before the system is deivered to the user and although aspection as a method has an impressive record of accomplishment, it is still not perfect.

As Dijkstra points out, the im-plication of the 30,000 years of error detection rate is only 30%. For every three bugs IBM finds during test phases, its users find calculation is that only a small fraction of the theoretically possible combinations of input data will ever occur during the lifetime of

The consequence of all this is simple, yet profoundly different from present practices. We must shift our emphasis from pre-operational testing of programs over to quality control at later stages. In fact, we must begin to "test" our programs while they are in operation, to a much greater extent than

a golden opportunity because we know exactly what input data we have to work with before we have to do something critical with it. Admittedly "before" is not years efore; it is only milliseconds before, but that is time enough to stop doing something wrong.

In practice, operational testing into the checking logic of a program. This is something we have historically been reluctant to do because "we didn't have the machine resources." Now we do. if we put reliability above perform-

One type of operational testing the use of distinct software. One or more independently generated (with different chance errors) program versions are used to check each other, usually with the help of supervisor program. Any difference in outputs indicates an er-

Another type of operational testing is to use a "deep" database diagnosis program which operates roughly by sampling, or by a multiprogrammed priority, in uni-son with the operational programs. Database diagnosis programs which do this have been used at Bell Labs in New Jersey, for example. Experience has shown that when these programs are first

"Hold on a minute — it's printing out the mailing list for my Valen-

Who'll be my

Valentine?

READERS are invited to send

me a Valentine card as evidence

I will willingly reciprocate such gestures and extend sin-cere good wishes to all our read-

ers, be they even readers of rival publications.

This is a time to drop the diffidence and speak from the

How about it then? Let's



applied they uncover about one data fault for every three records in the database, which has gone undetected for years by any of our conventional error-finding proce-

Less than one in 40 database environments seem to have a really deep diagnosis system in use. I do not mean to imply that early

quality control of programme systems is obsolete. But, it is time hat we recognised that it can only play a limited role in giving us the reliability we want and need. Operational testing - or built-in programmed double checking aust be applied to a far greater degree than it has been hitherto.

satisfaction and possibly an financial reward at review in Should the computer pair sional risk putting his head above Only in this way will we be able to attack the more realistic problem of the errors which will hurt the installation battlement, it us if we do not detect them today. applauded. As far as the good public are concerned, compan-represent incorrect gas bils, is

complete bank statements, into clusive medical diagnostics and comprehensible weather forcest the National Council for Council

FOCUS

medals

WHEN it comes to living dragoously, the Institute of Data had sing Management takes the sing Management takes the securit. Having nominated a sadifusers for a Rita (Recognition Information Technology Adientifusers) award, it let itself is fact a volanche of "why assessing a volanche of "why assessing the security of the security of

avolanche of "why nor a"

It is difficult to choose been

in efficient, cost-effective mas

frame operation incorporating

tabases, communication actual channels and multi-layered by

of staff, and the one-man permi

computer operation which ne

than adequately serves the co

ploying handicapped people aperhaps operating under the badicap of being offshore in the North Sea could both be sent

worthy candidates, well descrip

Unlike certain other profession

and trades, DP people epen find their reward in user and it

of an industry award.

Liberties, computers are often posented as a threat to individ freedom. Computers appear to have all

to answer for, and the opportunities of answering are decided; limited. However, given the ircreasing use of personal microom puters, the public may become better informed, especially at the I'l' Year organisers are working hard to spread light.

This general state of computer misunderstanding is not limited to the UK. Last month, the American can Today TV programme on Nationwide slot, devoted a sens of five early morning sessions of five early morning sessions the control of the general theme. The Wind Society. The episodes count such areas as the pace of technological growth, giving the will hashed example of Rolls Royce.

could be driven 10 times around the world on a single gallon of find and six of them would sit comfort the control of the cont

viewers meanwhile, glimpet of computers are limited to the sale technical approach of the BBC Computer Programme or as as formation processing background

to standard spy programmes.
From time to time, a parity larly gifted five-year-old is seen bearing his computer opponent the chess, but any meaningful distriction on computer-produced graphics, music or even voice synthesis is limited.

is limited.

The DP installation which he survived all budgeting and work flow odds and produced the deard goods on a clapped-out machine, deserves a medal and aspirits all

Possibly on a more practical be sis an award could be made for those installations prepared to a ganise training courses, establish career paths and maintain stards and procedures.

Whatever else, the IDPM itself deceases an industry sward for a deceases an industry sward for a

deserves an industry award for a least attempting to promote good computing causes. Alan Simpson

Ouadrant House, The Quadrant, Sutton, Surrey SM2 5AS Thursday, February 11, 1982

White collar fears not allayed

REDUNDANCY is the principal fear among people who are faced with new working practices stemming from the introduction of information technology. Nowhere is this more apparent than among white collar staff.

They are right to be worried. The effect on Britain's manufacturing industry of ordinary but better technology from abroad has put the boot into companies already struggling with Mrs Thatcher's recession. If the still-growing proportion of office-bound workers suffers anything like as much there will be howls of pain from Pontefract to Penge. Large employers are not being very successful in allaying

the fears. The Banking, Insurance and Finance Union plainly does not believe the big banks when they say that cutbacks in recruitment are almost wholly the result of the recession, and in any case, mainly affect school leavers.

Blsewhere, the Cabinet is resisting a technology agreement with the Civil Service unions. There is more than a hint of suspicion that the reason is further Civil Service cuts which the government does not want frustrated by the different issues of improved productivity from information

In the midst of this uncertainty the last thing that employers need is to be faced with objections to working with the technology which appears as machines on the desk. But a report out this week details the insidious problems which threaten the successful use of office computers.

The report, from the Alfred Marks Bureau, documents a string of ailments and complaints commonly cited by VDU operators, not least the problem of boredom.

Employers have been slow in realising that operators are as vital as the equipment itself. There now seems little doubt that in many cases the machinery, in combination with the environment in which it is installed, is fostering bad relations between users and bosses.

Byestrain can be caused by the glare of fluorescent lights reflected on the gleaming panels of a new word processor, or by typists staring at VDUs all day without adequate rest periods. Back pains can result from badly designed desks, chairs and keyboards. Boredom commonly manifests itself in absenteeism or high staff turnover.

For too long operators' complaints have been looked on as little more than mass hysteria. When selling new technology is a big enough problem in itself, to overlook the more mundane human aspects of the electronic office is

A worthwhile venture

namic, quick-on-the-feet salesmanship. Lamsac, the Local Authorities' Management Services and Computer Committee, is to be congratulated that it is prepared to change the image with a venture which makes a lot of commercial

cially to deal with local authority software is far from being a

puting as a method of bringing new applications into use quickly and cheaply. It has concluded that this could sometimes mean using software written outside the local

Software publishing is rapidly emerging as the most ffective way of selling software. Program authors are realising that they need the services of sales and distribution to make the most of their product, while others - IBM and ICL to name but two manufacturers - realise that they need outside-written products.

puting within local authorities carries a high reputation, and the skills the new venture needs are already there and

THIS week's example of the strange things people say about computers was sent in by Roger Evernden, of Ellbridge, Cornwall, who wints \$5.

For ultra high level languages we will investigate the claims of programmers advertised as being able to write programs for those with no knowledge of programming.

LETTERS I

Alcohol/creativity Opposite of one-off

write a book entitled Alcohol and the Creative Mind: A Practical Ap-Because of the element of hohe proach. It is a serious, nonmianism and hence the stigma sur-rounding the combination of alcospecialist discussion of the way alcohol can have a positive influence hol and work the people I am on creative thinking by breaking down fixed ideas and thinking secking to interview must be selfnominating. My book deals with strategies, making conceptual boundaries less rigid by dissolving the often stifling effects of emotio-nal and cultural blocks inculcated an important concept largely neglected till now, and is a serious study of the positive influence of alcohol on idea production and creative thinking. It is not about by society and so making it easier to originate fresh and innovative patterns of information.
I combine an historical and socividuals - a point to be stressed because my scientific argument exological perspective with a scienplains and defends the positive ufic explanation based on brain

correlation between moderate intake of alcohol and creativity. physiology and the psychology of Because of the stigms which my An important part of the book is subject carries it is difficult the final chapter consisting of in-terviews with people working in a overemphasise the seriousness of my book's approach. I wonder if very broad range of disciplines -from mathematics and philosophy anyone willing to talk to me about their relevant experience would

below?

alcohol in their approach to the creative aspect of their work. MICHAEL STEVENS Naturally I am looking for people distinguished by their achieve-35 Minster Road

Salary matters network

I READ the article What Makes the Ideal Job in DP (CW, January 28) with interest, until the last paragraph. I believe the sample chosen is insufficiently representa-tive to give any lead to industries companies that have undertaken such as manufacturing where sala-ries are depressed. I am sure that if The system was developed by a European consortium led by I/S Datacentralen af 1959, Denmark. these were included in the sample, they would pull salary much higher up the list [of factors in The partners in the consortium are (besides Datacentralen); Dataurgent need of management attenmont, Italy; Mathematischer Bera-

from manufacturing to the finan-cial establishments is almost terminal - let's hope they reach satura-

to acting and music - who use

G. CALVERLEY General manager computer services Turner & Newall Ltd

would be interested in hearing readers' views. We sell Autoprograms, a facility

generally accepted term, because there is certainly a difference in for generating efficient code which makes it suitable for programs in regular use rather than one-off jobs. I have always called such norapproach to the two types of venient if there was also a difmal routines "production" ference in their names FRANCES MOSELEY programs. However, in discussing this with other users, it has be-

of a one-off program? We are very keen to find out whether there is a

come apparent that production

Firefighters clash

Thought that Fire Protection was a Waste of Time and Money (CW, January 21).

My company has for over 20 years manufactured halon 1301 for precisely this type of application, and it is the much preferred agent to use rather than either halon 1211 or CO2. It is inaccurate to state that halon 1211 is the preferred product due to its sweet smell, dctachable if leakage

Currently in preparation is British Standard 5306 section 5.2 entitled Halon 1211 Total Flooding Systems, in which it is stated that under normal conditions ha-Ion 1211 is a colourless, odourless and electrically non-conductive gas", as is halon 1301. In any case a correctly installed and main-tained system would not require the occupants of the protected area to continually sniff for gas leaks.

However, more important is the fact that neither halon 1211 nor CO₂ systems can be operated while the computer room is occupied; prior evacuation is compulsory. In the new British Standard 5306 sec-tion 5.1, Halon 1301 Total Floodtungs-und Programmierungs-dienst GmbH, West Germany; the Steria Group (Steria, France; Ste-riabel, Belgium; and Sterialux, ing Systems, it is stated that prior Luxembourg), and System Dy-namics Limited, Ireland. evacuation is not required where the design concentration of halon 1301 in the air is less than six per The system runs on Datacentr

Using a halon 1301 system will

I SHOULD like to make a number save valuable time, money and is of points about your article So You extreme cases lives as the detection and extinguishing system is entirely automatic although time delays can be incorporated if re

Although it is true that halor products produce irritating by products, this needs to be put into context as the fire itself wil produce extremely large quantities of identical products. On average covering many tests by independent bodies, 15 parts per million ± 10 ppm of breakdown products are produced, which is minute com-pared with what the fire produces STEPHEN FISH

Halon market manage Pechiney Ugine Kuhimann Ltd



Prodigal is surpassed from the AS a current user of VME/B for operability than George 3 ever **TeleVideo**° two and a half years and a past user of George 3 for 10 years I was was. The wealth of facilities contained within VME/B is not there



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but that it should actually sell its own, and other people's, software applications.

dorities if this is quickest

1984 and all that .

BBC release on its Computer Literacy Project

It is proposing not only standardisation and co-ordination

The decision to set up a software publishing house espeleap in the dark.

Lamsac has done a lot of thorough research on microcom-

The publishing technique should work for Lamsac. Com-

surprised at the dog-in-the-manger attitude of Andrew Thomas's artisolely for system programmers to play with. For example, file handcle (CW, January 14) on George 3 and VME/B. ling is not only made simple but the same for all types of file. Such One can only assume that the characteristics as these are unfor-tunately missing in George 3. Returning to the prodigal son, there were many times on which I author was never subjected to the traumas of George 3's early childhood and only arrived on the scene when the prodigal son had reached maturity.

VME/B, no one would deny, also had an unhappy childhood, which fortunately it has grown out doubted George's parentage despite the fact he served me so well for so long.

of to become a far richer operating system in terms of facilities and

M. POULTON

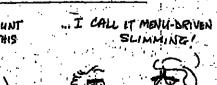
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Generating

DOWNTIME

buzz words HAVE you noticed that when buzz phrases such as "integrated organizational capability" crop up, that there are 728 other such phrases with exactly the same meaning? I have. And so has the Canadian Defence Department, which has compiled a Buzz Phrase Genera-

BPG generates three-word buzz phrases by selecting at random a word from each of three nine-word

Words in the first column are colour adjectives like institutional and interchangeable. The last column contains nouns like function and hardware. The middle column may contain adjectives, or nouns to be misused as adjectives.

For example no one would dare question, the grammar of the phase "definitive management options." It should, of course, be written "definitive options of man-Or perhaps it should never be written at all.

Still I shall be happy to supply a list of the three-column matrix of words on receipt of a samped-addressed envelope. It can readily be implemented on be implemented on a computer when random three-digit numbers would be used to produce such

have some anonymous letters of appreciation. It's only fair when, at other times of the year, we may be bombarded with barbed insults, gushing titales and threats of legal retribution. phrases An ideal application of computers, come to think of it. What the right arm's for

A FEW weeks ago I gave you on this occasion the fridge door. Chad's Fourth Law of Robotics:
That all laws of robotics should be translated into Japanese. This was prompted by the sad case of a Japanese worker killed by an industrial robot.

On this occasion the fridge door failed to open. The robot did not know how to open a fridge door. Why should it it is but a dumb moron? But it was well versed in Isaac Asimoly second I aw of Robotics.

panese worker killed by an indust-rial robot.

Now I hear of a robot running amok in France, only this time its victim was a fridge.

The robot was demonstrating its ability to walk over to a fridge, the door of which opened automat-ically, feech a can of beer and open it to alake a hillst.

Opening can of bakets

Opening cans of beer had been anaged successfully before, but

warfare WHEN Napoleon's troops were PERMU

sniped at and food sources des-troyed as they painfully retreated from Russia during one of the most vicious of winters, a new type of worfare was born: guerilla wurfare. Until then troops had telegraphed their clumsy lurches into battle.

A foreign power might accomplish "a subtle attack in which the of their love and appreciation of Chad's tireless pursuit of truth and knowledge through the economy was gradually eroded and weakened by inserting computer program changes, or otherwise al-

of it. Computer warfare has already become official policy for some terrorist groups, including Italy's Red Brigades, according to

Computer

Had autos developed at the same pace as computers, then a Robert Royce would now cost about 118

and six of them would stable ably on the top of a pin.

Other areas of TV attents were the computer at home two work and at school. For UK blowing people up. I think we should call them urbane guerillas.

Dial your future

The robot did not know how in open a 'fridge door. Why should it; it is but a dumb moron? But it was well versed in Isaac Asimov's. Second Law of Robotics, which states that it shall obey any commands from a human being except where execution of them contration with Woman magazine, offers a week the First Law says nothing about harming 'fridges and so it. Implemented the Second Law by smashing its iron first through the in fridge door and grabbing itself; a treats of samilogical influences are drawn.

Now guerilla warfare looks like taking a new twist, launching into the vulnerable world of data processing. An article in Science Digest suggests that an entire nation could be plunged into chaos by paralysing its electronic nerve

tering data."
Far-fetched nonsense? Not a bit

At least it diverts them from

I HAVE been eagerly awaiting the day when I could dial my horoscope from the privacy of my own bed, being ashamed to be seen reading my stars in the junk Press. That day is now with us.

With millions of women, and thousands of men, reading their star predictions at least five times a week, British Telecom has seen fit to add Starline to its catalogue of pre-recorded services.

waiting to be used.

Planner ensures that systems are 'operations friendly'

THE operations analyst is a member of the operations department with no day-to-day production responsibilities, concentrating full-time on the operational implications of the operations of the operations of the operations analyst is a member of the operations department troubleshooting, job setup, file such events as wasteful use of machine resources, systems prone to failure, excessive parameter intons of all new systems within a production of the operations of the operation of the oper time on the operational implica-

spend their time worrying about tonight's schedule and solving today's problems. He must allow his to become involved in those

from? What qualities must they and how the system is to be imple-

The first essential is that the operations manager should really believe in the need for the function when he sets it up, as operations analysts will need a high level of management support to counter the objections which will automat-

ically arise.

These will mainly come from the systems teams who will see the ops analysts as a hindrance to

systems implementation and an in-terference in their job.

Systems people will tell you that it is their job to take into account the requirements of all the interested parties in the system (in-cluding operations). However, with the greater specialisation of project teams and the increasing division between operations and systems, systems people can become remote from the realitles of running computer systems on a production basis.

They will be experts on the system they are developing, but will not necessarily understand how operations runs the existing systems which they must interface

The ops analyst, on the other hand, will be an expert in the existing production systems and must ensure that the new system can be integrated into the existing production schedules with the

6 There is a tendency to accept shortcomings in systems and find ways around their worst excesses

So how does the ops manager go, about establishing this role within operations? Most important to begin with is the setting of clear cut.

objectives,
A typical brief might bee
"The ops analyst will have no
reaponsibilities for day-to-day production running. He will concentrate on new and amended systems to ensure that they fulfil operations design require-

are handed over to production.

in a workable state

do not disrupt the running of
existing systems."

The ops analyst must be enwill be able to refine this role during the stages of development and The ops analyst must be encouraged to make a positive contribution at every stage of project development. He is not a systems auditor, sitting in judgment on the designs of others. He is an integral part of this development the designs of others. He is an integral part of this development the process, concerned only with the systems operability and not its business functionality.

In today's jargon, he must ensure that systems are "operations the designs of existing systems operability of systems, one of the sugy years arise is: "Why don't you second should assist in improving a measure to systems operability and not its though performance.

To aid operability of systems, the sally systems are "operations the ensure that systems are "operations the ensure that systems are "operations the ensure that systems are "operations friendly."

When the operations manager comes to recruit ops analysts, he need to usually look far. Most installations have one or two meet business deadlines, there is a installations have one or two itendency to accept shortcomings in systems and find ways around the operations in systems and find ways around the operations that it is an integral to the sugestions which will most certainty or computer systems, one of the sugy ye computer systems one of the sugy ye arise is: "Why don't you second should assist in improving operations which will most certainty or arise is: "Why don't you second should assist in improving operations which will most certainty or arise is: "Why don't you second should assist in improving operations which will most certainty or arise is: "Why don't you second should assist in improving operations work. There is are project to occupy an

tions of new systems.

Every ops manager who wishes to set up an analyst function must go against the operational grain. He must employ staff who do not spend their time worrying about to the domain of the ops analyst and can therefore be performed by him. All other "production" activities should be brought to the notice of systems management and a positive commitment to making improvements sought.

Systems reaction to the analyst is usually mixed. Some systems located to existing staff.
The ops analyst's first priority is

ops analysts to plan only for the future.

systems about to be implemented. He should set up discussions with Where do ops analysts come systems staff to determine when have? How can they gain mented, what systems support will be provided and what the contin-

> How often have you heard systems people lament "I can never find anyone to talk to in ops"?

in aiding the implementation, by arranging for additional back-up copies of files to be taken, shift cover to be arranged, production schedules and manuals to be amended, and so on.

For systems being tested, he should review the test plans, suggest any extra tests which might be introduced, review the effect on existing production schedules, etc. And it is his job to arrange additional machine time and media, write production JCL, assist in

For systems in the early stages development, the ops analyst has time to review any system do-cumentation produced and gradwork closely with the developers to usily learn about the system. He must review how the system actually affects operations in terms of

put. These should be brought to

is usually mixed. Some systems analysts welcome having a single point of contact who can represent operations and spare the time to alk about the future. (How often have you heard the systems people lament "I can never find anyone to talk to in ops. They arrange meetings, but cancel them whenever a

fuction problem crops up"?) Others see the analyst as a stumbling block whose role is to object to everything and delay all imple-

Ultimately, true acceptance of the ops analyst will only come through practical experience of his role in the development process. The proof of the pudding lies in fewer disruptions to existing systems - fewer system failures - better informed operations staff, and the general improve-

ments that come with the proper management of change.
It is not always essential for an ops analyst to come from within operations. Programmers and systems analysts make excellent ops analysts and my experience is that they are always surprised at how much there is to do on the operational side of systems de-

All ops analysts should be given some systems training, since topics like flowcharting, file design, on-line systems design and output report design are critical to his job. Interviewing and influencing skills should also be taught.

Besides the technical training

given to ops analysts, emphasis must also be given to standing the company's business and the way the computer systems



He should document such events as thasteful use of machine

aid that business.

Once you have appointed an ope analyst to cover a particular area of

It is not unknown for two inde-

pendent project groups to be simultaneously making amendments to the same system without understanding what the other is doing. It is the ops analyst's job to bring these separate requirements together and understand how the overall operation is affected. In developing the ops analyst role, what talents should the

operations manager look for?

It is vital that the analyst has been in and around computing for three or four years and has gained real practical experience. He or she must understand what the operator's job entails, how jobs are set-up on the machine, how data prep works, what operations utilities are available, what business functions the operation supports, how outputs are reconciled

He should also have knowledge of such applications as minicomputers, microfiche, writing JCL; run scheduling, operations stan-

His experience will have taught him that systems never quite work the way systems designers plan them. He will know that if there are ways in which the operators can bring the system down, they will find them eventually (there is a law which says that any system which is based on human reliability is an unreliable system).

The ops analyst must inject not so much a note of pessimism as one of realism

Systems analysts are such supreme optimists that they seldom believe that their systems contain all the normal pitfalls that every other system contains. Many every other system contains. Many a system analyst has been heard to say: "But you shouldn't have done that — the system didn't expect it." The operational retort should be: "But why did the system allow me to do that? — it should have stopped me doing it, if it couldn't cope with it."

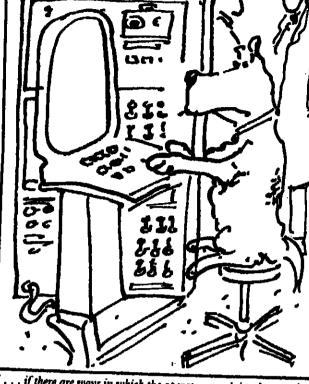
The ops analyst must inject into the project not so much a note of pessimism as one of realism. The system test will take longer

The system test will take longer than the systems analyst thinks—there will be problems when you try to feed an output file from the new system into a system which has been running for 10 years, is badly documented and no-one is exactly sure how it works—some programs will fail for fundamental reasons (can't take multi-reel input files—always expects there to be data on the input file—thinks all years have 365 days and 52 weeks). An ops analyst will see these same problems week after week on

same problems week after week on various systems and will quickly learn 'that all projects are bedevilled by similar problems. On the other, hand,' the systems analyst may only work on one project a year and thus will learn these hard year and thus will learn these hard operational lessons at a much slower rate. (Remember even the space shuttle had a delay due to systems interface problems!)

on one project to occupy an ops
analyst full-time.

His involvement ranges from from a broad operational view-



if there are ways in which the operators can bring the system down, by

will the users require for provision of output? What online system availability percentage can be

This places a requirement on the analyst to keep well in touch with the department, to ensure that he really knows what its needs are. This is very important since he is representing each section in his discussions with the development

Know your systems. The muslyst must understand in detail the system which is being designed. He must make time to study any design documents which have been published. He must flowchart the new system, see how it interfaces with existing systems and discuss operational requirements with the designers.

ments with the designers.

Only when he has this detailed knowledge can he fully relate to the systems analyst doing the job and make positive contributions towards the design of the operational aspects of the system.

He will practically identify with He will gradually identify with the project so much that he will

virtually become part of the development team. This is very much to be encouraged since far more can be achieved by these personal relationships than by reams sonal relationships than by reams of operational standards. This closeness will assist the recognition of his abilities and the vital role he has to play in project development. All this will lead to

• He must always remember that he is representing the interests of the whole ops

to a better designed, tested and implemented system.

Challenge everything. He must learn to challenge everything which could impact on the operations department, hvery opera-tional assumption made by the systems analyst in his design docu-ment must be challenged.

Some will have been made in-

Use broad vision. The ops analyst correctly, based upon what the must look at svery new system systems analyst thinks happens from a broad operational view within operations — or should on the machine room, but also on he an expect on his own system; handling, the network, remote oven know the production schedule of the system he is All secondment does is proafter the most ask what the requires amending, its dependencies, backality is for business functionals additional operations staff additional operations of the system may staff additional operations staff additional operations of the system in the substantial staff additional operations of the system in

Operations themselves may be changed how and when they rat system for greater operational of tency or owing to a change it business requirements.

Be single-minded. The mixt must always remember that he representing the interests of the whole ops department. He me therefore be single-minded a knowing what he wants and how

He will be under a lot d pressure to convince him that his dues not really want some of de things which he had requested in his design requirements ("It will delay the project to provide a automatic computer reconcilision of these financial fields. All ophave to do is collect these 10 m ports and add this figure to the ligure and . . .").

Operations must be sure that once the system is live, they can run the system efficiently day after day . . .

During the later phases of population ject development, the pressure the systems team to achieve our mitted implementation dates often becomes greater than ensuring the system is fully tested. (Ellis' arion says that "The time scale for an phase of project development of always be extended - except fa systems testing - which can only be shortened.")

The analyst must stand firm of those aspects of testing without which the system is not workshi in operational terms. He will ped strong support from his operations manager to stem the tide of "get He may lose the battle, but must ensure that the business users have

been made aware of the potential problems inherent in the imple-All this may sound very obsure. tive to the systems analyst used of a totally compliant ops department. But operations must be sur

that once the system is live, the after day, year after year. And what benefits will the busness ultimately derive from the

I believe that it will gain by having systems which are implemented in a controlled manner, operate more efficiently, fail less often and recover more quickly. This will enable the operations definitions of the controlled manufacture of the controlled manufacture. partment more easily to provide the business with the level of service it requires to meet its con

porare objectives

Operators are bored and troubled by office technology, says report

of operator absence.

BRITISH companies have their eyes firmly fixed on technology for improving efficiency in the office, despite widespread complaints of eye strain and other ailments among operators of the new machines. Boredom is also a major problem and it is leading to higher

These are some of the findings of a national survey* carried out by The Machine Dream. But while plete acceptance of machines in the office, they are often slow to realise that the operators of such devices are as vital as the equipment itself,

good as its operator, and it is imperative that employers take the operator's interests into considerstion," says Bernard Marks, chair-man of the Alfred Marks Group. "Technology is bringing with it the need for a higher calibre of operator with a clear requirement for almost continuous training."

Eye strain is the most common complaint of VDU operators, and headaches and migraines are suffered most often by data pre-

Some employers have reacted by eliminating glare and installing air conditioning, and some prohibit word processor constants. word processor operators from mechanical noise or constant chat-using a VDU for longer than cer-ter is not made clear. tain periods without a break.

Alfred Marks sent question- to

Eye strain is now the No 1 ill-

No 2 slot. The increase in the number of VDUs in use has been

paralleled by the increase in eye strain. From third position in

1974, it moved to second in 1977,

Although headaches and

Time-wasting due to poor instruction from executives Difficulty recruiting staff with adequate experience Difficulty recruiting staff with good skills Lack of personal contact with executives
Dissatisfaction with dictating methods of executives lye strain, headaches or other allments Boredom
Preferential treatment given to individual executives by
individual typists
Dissatisfaction with the equipment
Discomfort with the working environment

Problems most concerning managers in word processing areas

panies throughout the country, and replies were received from 193 firms employing anything from 25 to more than 5,000 staff. Half of the companies were in the Greater London area, with the remainder spread throughout Britain.

Word processing equipment continues to spread, with 37% of the companies questioned now using them. But old habits die hard, and manual typewriters are still to be found in 62% of companies. Electronic typewriters, with simple WP capabilities, are also on the increase and can be seen in nearly a third of the offices

Word processors were responsible for taking the boredom out of repetitive typing work, and many to be bigher than other job

naires to the executives responsible operators comfortable. The majority of offices (61%) are air panies throughout the country, steps to eliminate surface glare, thus reducing the likelihood of eye strain and headaches.

Regulations in force at one firm prevents its WP operators from using a VDU for more than three hours without a break, and in Lonabout the heat output of the equip ment, with 82% installing air con-

Probably the most important problem caused by working with machines is the routine element of Many companies thought that it was still too early to state with any degree of certainty what effect the new technology was having on their work. Those that had already seen a change thought that pro-ductivity had been increased and the quality of the work done was ployer, rather than risk a change of now higher,

Data prep staff appear to be the executives were experiencing in-creased efficiency from their secre-taries as WP equipment took over much of the time-consuming data prep vacancies are the mos difficult to fill. Data prep Pew companies said that the operators had the highest rate of installation of new technology had turnover in 42% of the suburban

difficulty Data prop operators Individual WP operators Clustered WP operators 23%

machinery. Boredom usually manifests itself in higher than average absenteeism — 33% of those sampled said that pool typists and data entry staff were the most susceptible job categories. absent from work no more than the national average, which is just as well because the word processor its full capabilities. was the machine thought most likely to be closed down as a result

The report concludes: "It vital that employers take care and pay attention to their dedicated machine operators - they are the

led to redundancies, and one com-pany had even increased staffing levels.

Companies surveyed.

Because of the wide selection of Operators working with the same piece of equipment all day and every day can suffer from boredom and illness that can be many companies are having trouble in recruiting staff with directly attributed to the this a problem.

A glance at the table showing the problems most concerning the managers of word processing degripe is directly attributable to poor training of the executive supplying work to the executive based computers of the executive based computers. word processor can easily decline into a very expensive typewriter if operators and users are unaware of

guinea pigs for the successful office of the future. Before too

Regular eye-testing Regulated rest periods Measures taken by companies using

Air conditioning
Eliminating glare
Ergonomically designed
desks & chairs
Noise absorbers
Modified lighting
Regular eventual

Eye fatigue 40% Headaches and migraines 35% Back ache 30% Stomach problems Pains in arms and necks Stress and worry Tiredness Ear ache

Most common ailments among

based computers, otherwise they will lose the marketing edge of competitors who are weld and adapting to the office of to-

The Machine Dream — A report on the experience and expectations of companies employing full-time machine operators to improve office productivity. Alfred Marks Bureau Statistical Services Division. Adia House, 84-86 Regent Street, London W1R 5PA. £20.00.



Employers urged to take greater care of their machine operators suffering from eye strain, fatigue and boredom.

April 23-25, 1982 Earls Court. London **Bringing** computers to life Ompliter Personal computers Home computing Small business systems In all walks of life, personal computers have revolutionised computer power - bringing it within the reach of a far wider and more popular market than ever before. in 1982 this revolution will explode onto the home and personal computer market. To meet this demand. Practical Computing and Your Computer announce a brand new event — The Computer Fair. The promotion of the exhibition will be heavily geared to attract the growing market of potential and existing users of personal computers, Bring your computers and services to life — all

> Exhibition Manager, THE COMPUTER FAIR, IPC Exhibitions Ltd., 1, Throwley Way. Sutton, Surrey, SM1 4QQ

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walks of life --- at The Computer Fair!

Position in Company

Too categories suffering high turnover and recruiting difficulties.

Can you spot the Pascal bugs?

in Pascal might care to flex their wits on the following exercise, which contains five errors in a nine-line Pascal program. See if you can spot them before reading

begin if nil# '0' then writeln('WRONG', +nil, .123)

errors, be not disheartened for you will be in the company of five reputable Pascal compilers. They were fed the code and not one

So if you have a Pascal compiler far more portable than programs available, it might be worth while written in Fortran or Cobol, which giving the program a run.

The exercise was used as ammunition in an article urging users and suppliers to adopt Pascal compilets conforming to a new standard due to be published by BSI, British Standards Institute, this month. The article is written by Brian Wichmann - a senior printhe many options available to For-tran and Cobol. cipal scientific officer at the Inormation Technology and Computing Centre of the National

Physical Laboratory (NPL).
The big drawback of Pascal hitherto, Wichmann argues, has been the lack of a standard. Pascal programs have therefore been

if the imminent standard is adopted, Pascal programs will be test suite for this purpose has been

both have had standards for well

Why is this so? Wichmann has a ready answer. The standard for Fortran and Cobol is no more than a definition and does not require that invalid programs be rejected by a compiler. At the same time the Pascal standard does not have

Some Fortran and Cobol programs are not portable because they use options specific to parti-cular compilers. Wichmann also claims that Pas-

cal compilers will have to undergo more rigorous testing before being cleared as standard than Fortran or Cobol compilers do at present. A

This suite, which conforms to standards agreed by ISO, Interna-tional Standards Organisation, insample programs such as the excrcise on this page which the compilers must reject with suitable diagnostics in order to pass.

There are also quality tests to ensure that the compiler can handle programs of sufficient complexity and that real arithmetic is sufficiently accurate.

There is now a good standard available and it is vital that it is used, Wichmann urges. This can be achieved only by independent testing of compilers, and this possibility is being investigated by the



Brian is a 'model' PhD

nodelling techniques to the design internal combustion engines has von a PhD for a project engineer

The finite element analysis ethod of analysing structures by dividing them into small imaginary regular pieces was combined with fluid mechanics to provide a complete model of the main bearing and crankshaft.

The degree was awarded to Brian Law, of diesel engine makers Perkins Engines of Peterborough, by Nottingham

The work took four years, and he write-up of the thesis a year of

Law's program should lend to

inaccurate and crankshafts at therefore usually made much to strong, resulting in unnecessary

by Philip Hunter

At the same time the program should help eliminate the trial and error aspect of crankshaft assembly by providing precise specific

There is even the possibily that this new program will in prove the reliability of engines by enabling tolerances to be more as curately determined. "It can invetigate what the engine would blike with a bent crankshaft," La

Whether this would eliminan those occasional batches of dod cars off the assembly line Law in unable to say. It is well know in some new cars start to develop early faults because crankshafts avings through the exact calcu-ation of crankshaft strengths. At and bearings were set slightly out present such calculations can be of alignment.

Coping with the rubbish

rought publicity to the activities of Lamsac, the Local Authorities Management Services and Compu-

Ross, Refuse Operation System Simulation to its friends, applies methods of so-called expert systems to calculate the optimum deployment of men, machines and dustblns for efficient refuse collection. Local authorities pay for the computing involved, £40 for an initial audit and more for the full service, depending on the size of

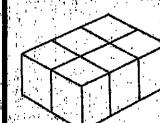
There is no intention to ram efficlency down the throat of local authorities, according to Lamsac's director Roy Barnes. "The system gives management a choice — pay or save," he says.

It all depends on which of 19 different methods of refuge collec-

tion the authority adopts

The computer system heak
down the 19 methods of collection and other factors such as number of vehicles and bins into 300 de ments for analysis on an ICL 150. There is also a version for its Commodore Pet, the micro and favoured by local government.

PUZZLER



GIVEN a piece of string 360cm long, what are the dimensions of the largest rectangular parcel (as regards volume) that can be tied up in the way illustrated hereonce right round the length, and twice right round the width? Ignore whatever extra string might be required to form a knot.

See page 46 for solution. (This diagram is just to show the general shape involved, and is not drawn to scale.)

Pascal

word output as a parameter.

2. Nil cannot be used as an idea. tifier because it is a reserved word. 3. # is written as CO (not

equals).

4. Nil cannot follow a sign.

5. A decimal point must preceded by a digit.

program test (output); ndi = '0';

writeln('RIGHT')

MOMENTUME £40K. No other computer maker offers you a standard upgrade path – letting you add resilience in steps as you need it. And no other computer maker offers resilience as a retrofittable add-on to its systems already in the field.

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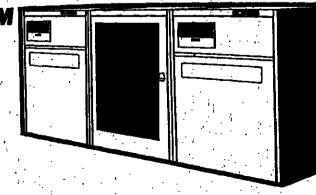
manufacturers can be just about as long or short as you

But if you want resilience - the built-in ability of your

system to recuperate quickly after a failure - your list will

And if you want this "availability insurance"

transaction processing, your list of computer





an III Information Technology Compar

We remember what it was like being an OEM

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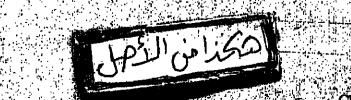
We make it our business to help

lo: George Thomson, Systime Limited. Concourse Computer Centre. 432 Dewsbury Road, Leeds LS11 7DF Tel: 0532 702211

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Company



code errors

Hrrors in code of program (set story top of page):

1. Program must contain the

So the corrected program is:

begin If nill <> '0' then writeln('WRONG', nill, 0.123)

Calling all DP athletes — Computastars is back!





TIME to get your tracksuit out of mothballs and blow the dust off your plimsolls — it's Computasions season again. This year's goes for an individual national mother teams in an individual commentation. Then, if the team makes it through to the finals, the star goes for an individual national mother teams in an individual commentation. Then, if the team makes it through to the finals, the star goes for an individual national mother teams in an individual commentation. Then, if the team makes it through to the finals, the star goes for an individual national mother teams in an individual commentation. Then, if the team makes it through to the finals, the star goes for an individual national mother teams in an individual commentation. from computer users and suppliers Events can range from long jump and discus through squat thrusts and short sprints to the

Computer Weekly's national And, after that, go on to battle with contingents from Holland however, organisers Gordon and Maureen Cairns are keeping the and Belgium for European medals. Computastars is a team and individual competition which calls for athletics skills on track and field, in general sports and in the gymnasium. There are to be four regional

which will be awarding gold, silver and bronze medals along with indi-

idual and team trophies.

do all the events, and therefore

Dates, venues Crawley, Saturday May 15 Enfield, Sunday May 23 Barnsley, Sunday June 13 Birmingham, Saturday June heats building up to national

Birmingham, Saturday July 29 best tradition of Computastars.

Among the strongest teams last year were the men of BL Systems, Entries are open to men's and women's teams of between three and five, and any number of teams who won the national team award. Kalamazoo's Jeff Harrison carried off the individual gold. can enter from a single user or

supplier company.

Each team puts up members who compete in the eight events which make up the regional heats. In the women's events, Legal & General Assurance won the team prize for the second year running, One of the team members has to with Number One Bridget Cuthill winning the women's individual

European gold in Holland, while Legal & General's Cuthill took the

among the hundreds of sportsmen and women taking part across the

Southern region, to be held at Crawley on May 15. London area teams get their chance at Enfield on May 23, the North on June 13 at Barnsley, and the Midlands at Birmingham on June 26.
The finals of the UK competi-

tion will be held in Birmingham on Saturday July 29. The European final will take place in Belgium in early September, and the top three men's and women's teams from the UK will be invited to be there.

Entry fee is £35 per team, with an additional £15 should the team make it to the finals. The number f teams for each regional heat must unfortunately be restricted to 40, so it's a case of first come, first

Closing date for receipt of en-tries is Friday, March 19. The en-try form is at the foot of this page.

the tug-of-war competition, Computatug. An opportunity to prove

superstrength, it is open to teams of five, men or women, though not

those already competing in Com-



Last year's UK finals. Dave Cross of National Provident makes a splead during the steeplechase. Behind him is Rowntree Mackintosh's Marin Righ

Competition rules

Teams will consist of not less tition, through injury, in

people.

Bach team other than a veterans' team is required to nominate a Number One competitor who will compete for the individual title in addition to being a member of the

Teams will compete in the regional preliminary heats.

The winning teams from each region will be invited to participate in the national final. Additionally,

in the men's competition, the nighest scoring veteran team and the highest scoring small unit team will be invited to compete in the

women's teams at the UK finals will be invited to participate in the European finals, scheduled early September in Belgium. In each event in each round,

three members of the team will compete - the nominated Number One, and two other team members chosen by the team cap-

Team captains must be a member of the team and the organisers will only recognise the team cap-tain's selection for events. Should the Number One be un-

ble to compete after being vill nominate a substitute from the remaining team members. If a substitute for the original Number One is used after the competition has started, then neither the original Number One nor the

Failure to comply with the nomination of teams and the risk of substitution will result in disqualification.

The competition will nomely consist of eight events, selectifrom the following classes which apply to both men and women. Running events - a

distance up to 800 yards per individual and possibly including her 2. Throwing events - range from cricket/hockey balls to competition weight shot. Basket methall skills may also be included.

3. General sports skills - ste ted from a number of categoris which demonstrate foot or had target shouting, penalties, drib-bling, rugby drop kicks and

4. Gyninastics - usually shor, hurp, violent and somewhat is

ning order will be at the discretion of the team cantain. In the case of a dispute, only the team captain will have the responsibility of representing his team. tition, the best result in the as

last event will decide. At the meetings, the referr's decision will be final and so subject to appeal.

competition, the best effort in the

This year's specials

main competition with special categories for small units and

The small units section is to give those companies or installations which have no more than 25 eligible people working at one location a chance to win their own award award while still competing in the

lile radius of the location.

these special sections have the standard £35 entry fee.

These classes are being run this year for men only, though if they attract enough interest among women they will be extended there

Likewise, the veterans section is for teams which comprise mem-

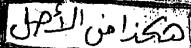
The entry cost is £10 per team. The same rules and eligibility regulations as for the main competi-

Women at Gloucester County Council tug to victory in the 1981 Computating COMPUTASTARS ENTRY FORM

We have read and accept the conditions of entry for the Computatars/Computatug 1982 and would like to enter Main competition .Men's teams lignature of DP manager or equivalent authority Position held .. We would like to compete in the following region: NORTH (BARNSLEY) MIDLANDS (BIRMINGHAM) LONDON (ENFIELD)

In all matters relating to the rules or conditions of entry, the decision of the organisers is final.

Please send entry form and fees to Computastars, 117b High Street; Croydon CR0 1QG, Telephone 01-688 6690



please circle appropriate region

SOUTH (CRAWLEY)

competition during the current act year.

Teams wishing to enter the veterans' section (men only) must wholly comprise members who are 35 years old or over on February 1, 1982. Teams in this section are not eligible to nominate a Number One of the individual little, and event selection will be any those members from the team.

Teams wishing to enter the small units section of the men's:

represents, that person will no longer be eligible to represent that

company after the date of leaving.

Companies may enter as many teams at they wish, subject to eligibility. A competitor may represent only one team and, having been nominated for that team, may not represent any other team in the competition during the current year.

1. The unit or company unit must employ less than 25 eligible people (men or women and including contract staff), within a 25 mile radius of the leasting of the tests. costed to data processing activities.

Only personnel who were employed by their present company prior to February 1, 1982 can 2. The team will compete in the main competition and must also main competition and must also main competition. represent that company.

Should a competitor leave the employ of the company he or she

nominate a Number One who wis Teams not entering the members of the company drawn from any location. Contract staff may be used subject to the qualifying cond-

Once a team entry has been accepted there will be no refund of ponsibility of the teams.

All competitors participate their own risk and the organize do not accept any responsibility loss of personal or compan property or injury, howsers

All entries must be signe the data processing equivalent authority.

"At British Telecom, our electronic mail service will demand round-the-clock reliability." Tandem delivers it.

British Telecom installed a Tandem NonStop^(™) computer for the advanced trials of a potential electronic mail service.

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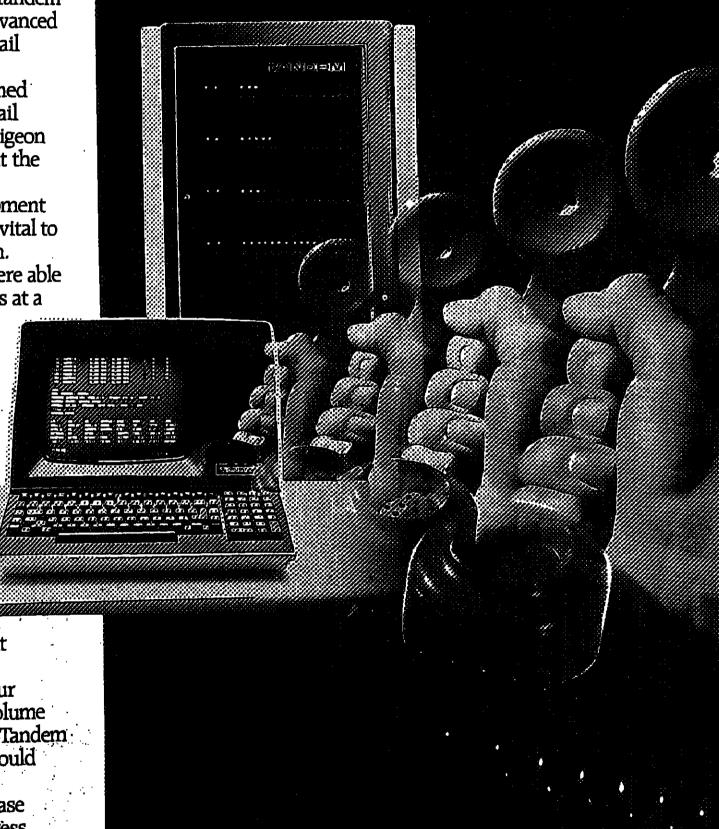
the event of a component failure.

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IN the six years that have elapsed since the first edition of this book was published, DP has changed dramatically not in terms of volume but in structure and area. The basic processes remain the same, but equipment has become more efficient and generally smal-ler with the development of the

silicon chip, particularly the Z80. This has meant the spread of DP into new areas; at the aimplest level into domestic appliances and traffic lights, and at the more complicated level into industry. More people are now forced to become involved in talking about computers, and are appreciated as a precion of the computers.

ters, and are entering a new and strange world fraught with jargon.

An increase in the use of word processors and other electronic office equipment has also intro-

Word postandarvirr

sooner or later.

The author tries to cover words in every aspect of DP in only 200 pages, which means that explana-tions are necessarily short and sometimes may verge on the inadequate for readers with no experience of computers.

For example, a modem is described as "a device used to mod-ulate and demodulate signals to be transmitted over communications facilities," with no clue as to its physical nature.

In addition to the lexicographical section, there are some very useful appendices, listing common acronyms and abbreviations — as essential in the computer industry as in the civil service.

It is sadly true though, that a dictionary is out of date the day

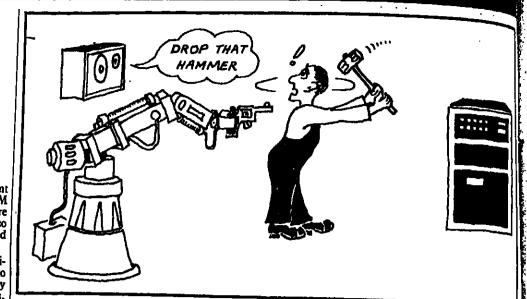
duced a new range of technical vocabulary, with which every office manager and secretary is going to have to become familiar absent. VMB and VMK are also operating systems and APL, are absent. VMB and VMK are also missing but old faithfuls DOS and George are in.

> Tables of hexadecimal to decimal conversion make this a book to keep in the desk drawer for handy ence, as do EBCDIC tables useful when interpreting punch cards without the aid of a card reader, and similar tables for pape

Considering its size and price, this book is excellent value for money, and contains a wealth of information that we may all need to use every day in the future.
What does BBCDIC stand for?
"Extended Binary Coded Decimal
Interchange Code," it says in the dictionary. Point proven?

DATA ANALYSIS

Maggie McLening



This introduction is reader friendly

Illustrating Computers (without much jargon). Colin Day and Donald Alcock. Pan Books.

IF books can be described as "reader friendly" in the same way that interactive computer systems are "user friendly", then this one

Bvery aspect of computing

gram or cartoon, and the book is written in a chatty style. The authors are to be congratu-

lated on simplifying the explana-tion of what is inside a computer and how it works into a mere two chapters, much of which is devoted to the mysteries of binary. Silicon chips are also described in great detail, previewing a chapter

computers put vast number of people out of work is reised, on paring this to the Luddin da and the authors attempt to man it in the form of a cartoon (show

As an aid to easy enlight for those who know nothing the DP at all, this book is excelent

Aid to the intimidated first time user

The Director's Guide to Computing 1981. An Institute of Directors publication. £1.95.

I AM generally suspicious of guidebooks full of advertisements ecause all too often the advertisng tends to colour the editorial content, so it was encouraging to read this apparently unbiased ac-count of the fundamental approach the layman might adopt to under-

standing computers.

Do not be put off by this mudest-looking publication, for be-tween its flimsy covers is to be found a wealth of good sound ad-vice particularly useful for the first ime user - that is both concise

and free from computer jargon.

It is all too easy to fall into the trap of being intimidated by the prospect of getting a computer and quently seeking the often expensive services of an "indepenconsultant, but, as this does well to remind us, there

called experts than meet the portant management tool or could benefit considerably im

An interesting chapter by Dog Eyeions (one of the dozen subor on the alternatives to in-hom computing, particularly burein, truces their development through

Perhaps one of the most post nant comments in this guide construm P. Ii. Thomas: "The competer business is based on complex and fast changing technology (will which it sometimes seems ob sessed), talks a language of a own, and is till had at comme nicating in business terms."

David Condon Deputy chairman of Grover Publications Ltd, London, which has just installed its first computer system.

Basic telecoms guide in official handbook

munications Press, London.

WE have yet to see any material fulfilment of the opportunities promised by the passing of the British Telecommunications Act, but there is a lot of interest professed in the area and almost as nuch ignorance displayed.
This handbook provides a plain

ould be useful to the manager landing his way around in telecomnunications for the first time.
The book is firmly simed at isers, providing a range of information from lists of equipment

British Telecom's finances,
Reference material such as it
18 pages of names and addressed
regional Post Office Advant
Committee officials alternates with passages on dealing with consuler problems and selecting consulers and training courses.

But the bulk of the book consists of introductions and applications.

siats of introductory explanations on telex message switches, on PABXs, on viewdata and teletra. The most topical explanation is the summary of the government liberalisation policy, the provision of the British Telecommunication Act and the roles of the Office of Fair Trading and the Monopolis Donald Kennell

Helping librarians to choose

Minis; Micros and Terminals for
Libraries and Information Services. Reliced by Alan Gilchrist.
Heygien. 121pp. 67,50.
DESPITE its rather dull and daunting appearance, this is an invaluable book for any librarian or information scientist contemplating automation.

However, as the conference that it is given in 1980, some of the information may be out of date.

There is a useful index and some of the papers give a list of references. A glossary of technical terms would have been welcome, it comes to explain what "electronic contemplation of the papers are taken from what the papers are taken from what the incomplete contemplation of the papers are taken from what the papers are taken from what

ing automation:

The eleven papers are written by specialists with practical experience of their subjects, and they give helpful advice and informa-

only to explain what "electronic mice" are.

Assistant librarian, Surena Central Library, Hen

Cassani appointed to IBM boards

KASPAR CASSANI, IBM vice- in 1951, and after holding sales president, has been elected to the boards of IBM UK Holdings and and staff positions there went to IBM Europe as director of opera-tions for South-west Europe. He IBM UK, following the resigna-tion of IBM's senior vice-president became director of marketing is Jacques Maisonrouge from those

After a year as director of product line at IBM World Trade The changes follow Maisonrouge's appointment to the com-pany's corporate office and corheadquarters in the US, he became general manager, North-west porate managment committee in December. Cassani succeeded him In 1976 he became administr as chairman and chief excutive officer of the IBM World Trade/ Middle East/Africa Corporation teur-directeur-general, IBM Europe, and in 1980 was elected president of IBM World Trade Europe/Middle East/Africa Corand as president IBM Europe.
Cassani joined IBM Switzerland

■ Richard Hamper has joined ■ Mario Guzzetti, former inter-Wordplex as national systems manager, responsible for software support. He was previously with become sales and marketing man-ager for Europe, the Middle East Raytheon International Data Systems, where he was marketing services manager for two years, based in Sydney, Australia.

■ Jack Iddon has been appointed

Computer networking. BCS Cheltenham and Gloucester branch. Queens Hotel, Chelten-

Medical systems. BCS Glasgow branch. The Music Room, Staff

Club, University of Strathclyde, John Street, Glasgow. 6.30.

WA Packages to micros. BCS Word Processing and Office Auto-

CONFERENCES

THE fourth annual symposium

on the developments in electronic

mail and messaging in Europe will be held on March 22-23 at the Cumberland Hotel, London. Or-ganised by the Yankee Group, it aims to bring together speakers from Europe and North America

to present an analysis of the range of services, systems, products and suppliers in electronic mail. Top-ks include text messaging systems,

DIARY

FEBRUARY 15

Robert Wright has been ap-Aidlands sales executive at Versatec. He previously spent four years with Texas Instruments, where he pointed sales manager for the North-east of England at Atlantic was Northern region sales manager in the digital systems division. Computer Leasing. He was previously country sales manager with Leasco. ■ Alan Griffiths has been appoin

nand Grintins as been appointed product manager, communications products, at Computer Technology. He joined the company after two years as sales executive with Datapoint. Mike Bardell-Smith has been appointed systems OEM manager at Data Recognition. He was formerly the company's software

mation Group. Prudential Assurance, 142 Holborn Bars, London

national sales manager with

Perkin-Elmer Data Systems, has

and Africa at Anadex. Immedi-

managed his own company,

Wordata, which acted as a distri-

butor for AM Jaquard Systems.

before joining Anadex he

protection. BCS North Staffordshire branch. Computer Centre, North Staffs Polytechnic, Stafford. 8.00.

FBBRUARY 17

Trends in engineering applica-tions with 16-bit microprocessors, half-day symposium. BCS Bir-

systems, European market dynamics and teletex. Fee is £295 + VAT.

Further information from Al

Dunn, The Yankee Group, Regal House, Lower Road, Chorley-wood, Herts. Tel: (44) 9278 4119.

■ A CONFERENCE and exhibi-

organised by Online and will be held at the London Tara Hotel

Motor Co. 10.30. Registration fee for the day is £15. Advanced regis-How do we classify business systems? BCS BIS Group. 6.00. Contact Colin Campbell on 01-580 tration required. Contact Peter Andow, Dept. of Chemical Engi

AIM visit. Computing for solici-tors. BCS Humberside branch. AIM, Derrington Street, Humber-

is structured in six half-day sessions and will deal with the

selection and implementation of local network systems, including

developments in Ethernet and the Cambridge Ring, and PABX. On-

line claims that the exhibition of

local network products is the first

ferences, Argyle House, Northwood Hills, Middx HA6

tion devoted to local networks and distributed office systems is being to fits kind. Registration fee is £385 + VAT. Details from Online Con-

from April 14-16. The conference ITS. Tel: (09274) 28211.

Computers in weather forecast-ing. BCS Leeds branch. Parkway Process control at Fords. BCS Process Control Group. Ford

Top jobs at Systems 4 **Industries**

TWO vice-presidents at Systems Industries have taken a step up the company ladder to become senior vice-presidents in their own fields. Kent Winton becomes senior vice-president, marketing. He has been with the company since 1970, and vice-president, marketing

marketing activities worldwide.

Richard Milligan, who joined
SI in 1973, has been promoted to senior vice-president, custome service. He was appointed vicepresident, customer service in 1978. In his new role, he will be responsible for all manufacturing and domestic customer service

Alison Newell, managing director of F.International, has been co-opted to the Council of the Computing Services Association. She will also chair

■ Peter Johns, Stephen Jackson and Geoff Bond have been ap-pointed sales executives at Inter-active Database Systems. Johns joins the company from Altergo, where he was responsible for de-veloping the Northern office. His territory with IDS will be Manchester, Liverpool and Newcastle Jackson, whose territory is North London, joins from Burroughs, and Bond, who becomes support manager, was formerly with a

Determination paid off for David Matison, recently awarded the National Computing Centre Certificate in basic systems analysis. Matison, who is blind, was given all course material four months before he attended the course. Exercises and tests were transcribed on to audio cassettes, and he answered the questions and dictated his project using his own dictaphone. Matison has worked for the computer branch of the North-eastern regional headquarters of the Central Electricity Board at Harrogate for 11 years. The course was run by John Bailey of the NCC. ■ Gerald Roll has been appointed marketing manager for British Micro's MIMI 801 range of microcomputers. He was previously in marketing for 10 years with Triumph Adler.

> ■ Gavin Dyer has joined Systems Production as sales manager. He was previously sales manager

■ Nick Lennard has been appoin ted sales manager for the financial planning division of Package Programs Ltd, PPL. He was previously financial director of several P&O subsidiaries.

Head of R&D for Sinclair SINCLAIR research's new R&I division, based in Southampton will be headed by Michael Pye who has been appointed head

He joins the company from Honeywell Control Systems (UK), where he was director of engineering. Previous positions in velopment at Gillette and technical and later managing director at Sin-clair Radionics.

New director

man Pratt Thompson has joined the board of the AID Group as a non-executive director. His former posts have included deputy man aging director of the electrical components group Bowthorpe Holdings and vice-president of t US conglomerate AMF.

Wilkes Computing

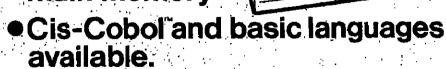
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neering, Loughborough University, Loughborough, Leicestershire, LE113TU.

FEBRUARY 18

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Up and up it goes. Rate increases, Souring day to day costs. Rent rises. And no end it

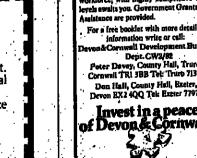
choice of industrial/manufacturing sites are evallable. Rates are reasonable and a loya

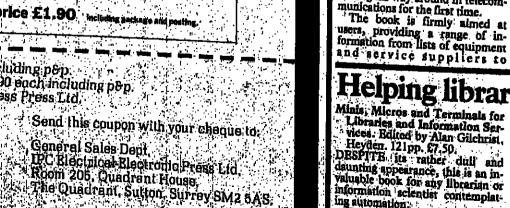
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Shredder is portable

Paperax, to be the first truly porta-ble machine of its kind on the UK

The shredder will cope with nearly all sizes of paper, up to and workstation from Gerber is now

It weighs only 12kg, can be moved by any member of staff, and its portability enables it to be transported on the back seat of a without difficulty, says raperax.

Paperax Limited (CW), Unit 5, Southdown Industrial Estate, Harpenden, Herts. Tel: (05827)

1TS new wide drum plotter produces large scale, multi-colour drawings economically for compu-ter-aided design and manufactur-

ing users, says Calcomp.

The Model 1060 is designed to combine the space saving features of a drum plotter with the performance of large flatbeds. It has a types - translucent, rag, velium and polyester film. Through operator controlled speed and acceleration, high plot quality is obtained with four different pen 54in wide drum which provides a maximum drawing size of 4ft 6in × 120ft (the roll length). It is avail-able with an optional 36in wide

Drum plotter for

CAD/CAM users

Priced at about £26,000 (in single quantity), the plotter can operate in online, offline, and remote/time sharing environments.

Calcomp Ltd (CW), Cory House, The Ring, Bracknell, Berks RG12 1ER. Tel: Bracknell The high performance 1060 has a drawing speed of 30ins per second, uses linear pen actuation for the fastest pen up/down times (0344) 50211.

IDS-80 raster station

ble machine of its kind on the UK market. The machine fits neatly on to any desktop or working surface, allowing it to be used in any area within the office environment.

It weighs only 12kg, can be moved by any member of staff, and its neatly like another it to be used in any area without difficulty, says Paperax.

Paperax Limited (CW), Unit 5, Southdown Industrial Estate, Southdown Tale (BS827)

Workstation from Gerber is now available on the company's 1DS-80 CAD/CAM system.

Gerber claims that the workstation, which incorporates an independent HP1000E computer with 256 Kbytes of high performance memory. Offers significant im-

memory, offers significant im-provements in multi-workstation

performance over the more conventional systems. These distri-

Gerber Systems Technology Inc (CW), Clive House, 12-18 Queens Road, Weybridge, Sur-rey KT13 9XD. Tel: (0932) 55951. We're telling your MD a thing or two about Local Networks.

The Saucon 800 colour VDU from Sait Electronics UK.

Colour display system!

THE Satteon 800 from Satt controlled keyboard. Cursor postioning is controlled from the key system aimed at a wide range of board, as is the choice of function Electronics is a colour display system aimed at a wide range of process control applications where comprehensive dynamic monitor-

comprehensive dynamic monitoring is required by the operator.

Designed to be used with Satt's Midi, Maxi and Jumbo programmable logic control systems, the system gives both general and detailed information, shows trends and analyses. and analyses, statistical operating data, and so forth.

Applications include any indust-

Applications include any industries where complex process control is undertaken, involving fluids handling operations, including the dairy industry, brewing and distilling, chemical engineering and similar handling operations.

The display is built up both statically and dynamically opling

ically and dynamically online, using the unit's microcomputer

for characters, symbols, and choice of background and foreground colours to be used be signed for ease of use, the case

Apart from the VDU and min keyboard, the system also has the facility for a double flexible the unit for picture storage, and a sub sidiary operator's keyboard fa changing process control pumpers while the system is runing. Two key locks are built into this give a three-level priority sous

Satt Electronics (UK) Ltd, Unit E, 13 Holder Road, Aldershot, Hants, GU12 481. Tel: 0252 331651/2.

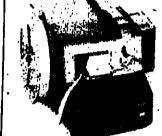
Felephone typesetting

THE Typeshare package aims to provide real time typesetting over

It was developed and is marketed by the company of the same name, which says it is the only system that will put the subscriber in full control of the end result and that can automatically provide a facsimile of the setting within six

The package includes an intelligent multi-functional terminal, a compact keyboard, and an instant computer-linked facsimile feature, says Typeshare.

Typeshare Ltd (CW), 42 Gloucester Crescent, London NW1 7DL. Tel: 01-352 8384.



THE CT 5000 is a free-unding combined punch and reads and with electronic interfaces and count allowing 5, 6 or 8 unit tapes to be read at switchable band rates up to 2,400 band, while 5, 6 or 8 unitapes can be punched at switched band rates up to 300 band. The band rates up to 300 band, while band rates up to 300 band. The band rates up to 300 band rates up to 300

Peripheral Hardware Ltd (CW), Armfield Close, East Mocassy, Surrey. Tel. 01-941 4806. The Philips Copy 80 printer.



The Olympia Boss microcomputer is designed to be easy to operate

processing. A full qwerty and Ascii upper and lower case keyboard, with a numeric pad is provided. There are 10 programmable func-

tion keys plus five cursor keys.

The display screen is a 12in
CRT monitor, green on black
which can be inversed by program. It provides the extra large capacity of 28 lines of 80 characters (2,240 characters total) which is virtually the size of a complete A4 page. High resolution graphics are also provided. The screen is flicker free and has a brightness control.

clude sales ledger and purchase ledger, stock control, invoicing and payroll and there are also word processing packages to improve typists' productivity.

Prices start at less than £3,000

Olympia Business Machines & Co Ltd (CW), Market Depart-

available systems has been de-veloped by Mitsui Computers. Called Telereader, the system, which utilises Mitsui's latest deskment — Computer Systems, Olympia House, 199-205 Old Ma-rylebone Road, London NW1 5QS. Telephone: 01-262 6788. top OCR machine, the TO-5000, and its CR-3000 message entry in-telligent display terminal, costs about £10,000.

Shugart doubles storage capacity

floppy disc drives that are said to allow users to double existing storage capacity by placing two units in the space of one standard model, have been introduced by

SA860 (double-sided) drives, exactly half the height of standard eight-inch floppies, are fully com-patible with Shugart's industry-standard SA801/851 series.

The new drives offer unformatted storage capacity of up to 1.6 Mbytes in the double-density SA860, track-to-track access time

A HIGH-SPEED OCR system for

elex message entry that is claimed

to be less than half the cost of other

TWO half-height, eight-inch fast as standard eight-inch floppies floppy disc drives that are said to - and average access time of 89

Two new electrical functions true ready and buffered seek, are offered on the SA810/860. Together they are claimed to climinate the need for motor start, seek, and seek complete timers, allowing the system to operate at peak effi-

Priced at \$385 and \$450 respectively in quantities of 500 units the \$A810 and \$A860 will be avail able in the first half of 1982. Shugart Associates (CW), 475 Oakmead Parkway, Sunnyvale CA 94086, Tel: (408) 7330100.

Messages for telex transmission are fed into the TO-5000, which

scans at 300 chps, and from there they appear on the screen of the CR-3000 for editing and verification before transmission.

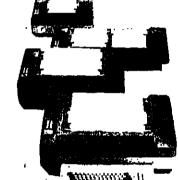
display Telex message entry system

LATEST visual display termina from Gresham Lion, the Lyme 6000, features a high resolution 14 inch colour screen providing an eight colour display. It is sup-ported with a selection of software options, including alternate char acter sets, colour graphics pack ages and full compatibility with

Eight-colour

LYME 6000

Mitsui Computers (CW), Oakeroft Road, Chessington, Surrey KT9 1SA. Tel: 01-397 5111. Gresham Lion (CW), Gresham House, Twickenham Road, Fel-tham, Middlesex. Tel: 01-894 5511.



PRODUCTS - 2

Boss for

small

business

WITH hardware and software designed for a full range of small business applications, the Boss microcomputer is the latest addition to Olympia's office equipment

range.

The range will also appeal to experienced, larger companies needing data processing facilities at the user point, says Olympia. There is the facility to communicate with mainframe computers and experience of the same computer systems.

and other computer systems, and

the systems have been designed to

be simple to understand and

The microcomputers have 64K

of RAM and choice of external storage capacity, and all use the Z80A processor chip. Three of the

systems use twin, high density mini-floppy disc drives with a sto-

mini-floppy disc drives with a storage capacity ranging from 140 to 600 Kbytes per disc. The larger capacity 5 Mbyte system uses one mini-Winchester hard disc drive and one 600K mini-floppy disc.

Three printers are already available — 80 and 132 column do the column

matrix printers plus Olympia's Whisperdisc daisywheel for word

Versatile range of terminals

A RANGE of high performance matrix printer terminals from Peri-pheral Hardware comprises three machines: the series PH 1000, 2000 and 4000 from which eight different versions can be derived to meet a variety of applications.

The features will permit any of

the machines to operate either as a hard copy printer (RO version) or as a printer-terminal with key-board (KSR version), while for graphic representation a printer plotter is available.

The series 1000 and 2000

machines have printing speeds of 150 chps and 200 chps respectively but higher speeds of 165 chps up to 280 chps (with software or electronic parts and the software parts are electronic parts and the software or electronic parts and the software or electronic parts are electronic parts and the software or electronic parts and the software or electronic parts are electronic parts and the software or electronic parts are electronic parts and the software or electronic parts are electronic parts and the software or electronic parts are electronic parts and the software or electronic parts are electronic parts and the software or electronic parts are electronic parts and t electronic switchable atternactive are available on the series 4000.

A very high resolution of the matrix permits printing in correspondence quality at a speed of 85chps switchable to 170chps. Proportionally spaced printing is also available as an option:

Solid-state printing technique

A DESK-TOP printer claimed to be totally silent when on standby and almost inaudible when printing, is announced by Philips. employs a new solid-state printing technique based on the momentary heating of tiny resis-tors, which means that the only moving part required is the platen that advances the heat-sensitive

paper.
The Philips Copy 80 printer is a microcomputer-controlled line printer intended primarily as a high-speed hard-copy device for visual display terminals.
The machine may also be connected directly to a private telex exchange as a receive-only terminal or via a modem to a telephone

nal, or via a modem to a telephone

The machine's printing width of 80 characters per line and printing speed of 240 lines/minute mean that a 25-line screenful of information can be printed out in just over

Philips Elektronikindustrier AB (CW), S-175 88 Järfälla, Sweden. Telephone: +46 758 10000. Telex: 115 05 PEAB S.



Memory up, cost down

NRW memory boards for Microfin capture systems by between 10% Systems' portable data capture terminals' significantly increase the memory size while substantially reducing the cost says the company to the many systems by the cost says the cost sa

pany, pany, the cost, says the comportable data capture systems by increasing the range of applications. These now include applications. These now include applications. iron 8k to 32k and the missimum end to be contained in the terminated comes. RAM memory size from all before further data is collected.

Microfin Systems (CW),



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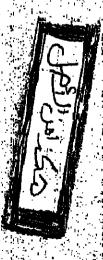
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Remote devices seem local

DATATRAK has started de-liveries of its Procon II protocol

Convertor.
Conceived originally for use with hand-held terminals, it provides for auto answer and disconnection of moderns, and error control, making remote terminals appear as local devices to host machines.

Procon II is a low-cost asynchro-

Procon II is a low-cost asynchronous device which can interface
directly to any computer capable
of supporting teletype protocol,
says Datatrak.

The uhit includes internal fuse
disconnection devices for the protection of modems, and its
firmware is designed to ensure line
disconnection and prevent accidental or deliberate fidomination?

of data input facilities.

Pacifities for Telzon one-way
and two-way data communications
are provided as input protocols.

Teletype and 2741 are provided as

ottput.

The unit is also available as a self-powered ORM "black bot comprising two UARTs, 1802 CPU, four Kbytes of ROM, four Kbytes of CMOS RAM with bal-

kbytes of CMUS KAM and tery back-up.
Procon II is part of a modular system including tape and disappooling stores, call logging printers and synchronous adaptor. In put protocols for competitive translas will shortly be announced.
Datatrak Ltd (CW), Computer Centre, Gayton, Northamptor, NN7 3EU, Tel: (0604) 858011.

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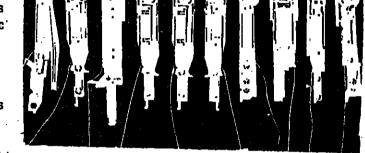
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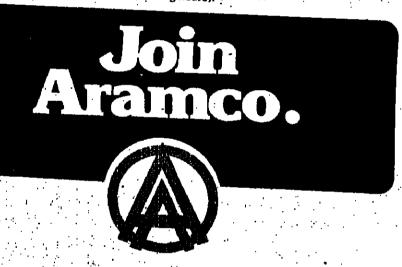
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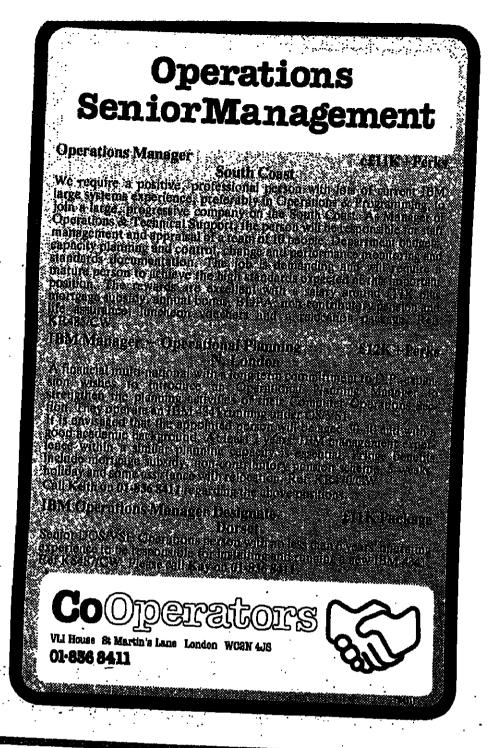
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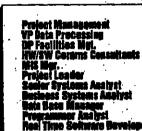
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Bahrain is a politically stable and progressive state with strong traditional links with Britain. Social conditions are good and free from irksome restrictions. The Island has developed an excellent harmony between East and West and enjoys, for the greater part of the year, a pleasant maritime climate.

The Company: A successful and well-established industrial organisation which forms part of a large and diverse multi-national group. The Company has been using computers since the 1960's and is currently developing a number of sophisticated applications on its IBM 303) and 4341 maintrames under OS/VST. Extensive use is made of the TOTAL Database and ENVIRON t.p. monitor. As a result of the expansion of their d.p. activities, our client seeks to recruit for the following positions. Good career prospects exist within the Company together with the possibility to transfer within the group.

Systems Analyst

c. £18,500 Applicants must have good commercial systems experience, preferably in an IBM environment. The position will involve responsibility for the development of a number of financial systems.

c. £15,500 Applicants must have a good IBM COBOL experience and have had some exposure to systems design.

Analyst/Programmer

Programmers c. £14,000

Applicants should have at least 2 years' IBM COBOL experience in an OS environment.

* Considerable assistance towards secondary education for

Benefits:

Programmers

£7,500 - £9,500

equipment.

- ★ Single or family status
 ★ Free furnished accommodation in modern bungalows
 ★ Five weeks' paid leave annually paid return flight to the U.K.
 - cligible children * Excellent recreational facilities
- * Free medical/dental attention for all employees

For further details, please telephone or write to Andrew Cousins quoting ref 5731



123, New Bond Street, London WIY 0HR 01-499 7761

IBM people - Midlands

Our client finds that the new year has brought exciting new development work from their customers. The company is a leading Midlands systems house, specialising in the IBM marketplace. Their reputation for the quality of their staff is second to none. If you feel the demanding, professional, exciting world of a systems house would be of interest then these vacancies will suit you.

The projects undertaken are of a wide variety, covering most of the IBM range of equipment, including newly announced products.
The same is true of the languages, teleprocessing and database techniques which are in use.

A few of the benefits are shown alongside, but the major factor must be the chance to really progress one's career in a positive way.

We seek people who have IBM programming skills, using COBOL or PLI..

Additional skills in teleprocessing or database techniques such as

Commercial use of these languages is required, on any IBM type

CICS, DLI or IMS DC would be very valuable.

* Salary reviews every six months

* Pension, health and life insurance

* Five weeks holiday, flexitime

* Bonus, expenses and car allowance

Variety of development projects

Analyst/Programmers £8,000 - £12,000

The skills for these requirements are similar to the ones mentioned opposite. In addition, we will be looking for an element of program and system design in your background. Experience of team or project management would also be of great interest.

Please contact Mike Hessian:- 021 236 2929 (24 hrs) to discuss these vacancies, Ref H47/01.

South Coast Opportunities.

Zurich Life is part of the International multimillion pound Zurich Insurance group. Our continued expansion has led to more openings for high calibre men and women at our Portsmouth Head Office. This is an opportunity to get in on the ground floor of a major project to develop totally new systems for the Company, involving both online and batch applications.

We currently operate a four megabyte IBM 4341 under DOS/VSE using CICS and DL/1 and a two megabyte IBM 370/158 under DOS/VSE using VOLLIE, CICS and DL/1.

Zurich's continuous training policy will make sure you will easily adapt to our standards and techniques and be prepared to meet the requirements for promotion as soon as the opportunity arises.



Starting Salary c £9,600

Systems Analysts

Around 3 years' analysis experience in a commercial environment, preferably with a background in programming and some experience of DB/DC. Insurance experience an advantage.

Senior Programmers Starting Salary c £8,300

A minimum of 3 years' Cobol programming experience is essential, preferably with some experience of structured programming techniques and of CICS and/or DL/1. Job responsibilities will include preparation of program specifications and supervision of Programmers and Trainee Programmers within a project team.

Our Company offers a first-class working environment in a modern, prestige office, together with the following benefits:

* An assisted mortgage scheme which can add a substantial sum to the salaries quoted. (At current mortgage interest rates a qualifying mortgage of £10,000 could add about £1,000

and a qualifying mortgage of £20,000 could add almost £2,000).

- ★ Generous relocation expenses, including, where appropriate, interest-free bridging finance to facilitate early settlement in the area.
- * Non-contributory pension scheme including free life assurance.
- ★ Non-contributory Permanent Health Insurance Scheme.
- ★ Subsidised Restaurant.
- * Flexible Working Hours.

If you feel that your skills and experience can contribute to both your own and our future, write giving personal and career details, marking your envelope for the attention of:

C F Nash. Personnel Manager. Zurich Insurance, Zurich House. Stanhope Road. PORTSMOUTH, PO1 1DU.

Or telephone for an application form 0705 822200 Ext 3044.

Zurichlife

Senior Sales and Marketing Executive

c.£25,000+Car

Our client is a successful and profitable subsidiary of a well known U.S. manufacturer, with an established and substantial base of prestigious UK customers. Their Field Service Engineering Division has grown rapidly over the past 12 years and is now a major force in the third party maintenance market. With a £ multi-million turnover, a strong national branch network and an ability to guarantee two hour response time throughout the UK, they are well placed to take a substantially increased share of this new market, which is probably the fastest growing sector of the DP industry.

Their service covers a wide range of hardware, including mini and micro-based systems with their associated peripherals. The quality of their service is reflected by the fact that many leading UK distributors not only recommend them to their major accounts, but also involve them in critical pre-sales negotiations

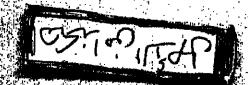
London based

The company has a rare opportunity for a sales and marketing professional to handle negotiations with major accounts and distributors. A flair for closing orders is essential as they have an abundance of enquiries. Experience of large company sales/marketing and/or running one's own business would be advantageous. Applicants are welcome from any sector of the DP industry, and familiarity with Bureau or OEM environments is preferable.

The remuneration package is negotiable, and will include a basic salary with an initial guarantee and appropriate fringe benefits, Gross earnings as high as £40,000 are possible and the current five year business plan provides an excellent long term career path for a person with imagination.

For further information, please contact Peter Lloyd on 01-631 4184 or write to him at: A & A Consultants Limited. 10 Little Portland Street, London W1N 5DF.





Advanced Signal Processing to £10,000

Central London & West Surrey

Logica's reputation for applied research continues to grow and our many prestigious clients include international companies, multi-national agencies

Our work involving advanced signal processing skills includes space and defence projects in

- Image Processing
- Pattern Recognition
- Speech Recognition
- Parallel Processing

To keep pace with rapidly developing technology we also have a substantial in-house programme to provide development tools for the future.

At present we are particularly looking for people with up to 5 years experience to work on real-time. microprocessor based systems, array processors, and vision systems

If you are keen to develop your skills in a dynamic

Please write for an application form (rel TG/35) to

Julia Roth Logica Limited 64 Newman Street London W1A 4SE telephone 01-637 9111

Technical Projects Manager

£14,000 to £18,000

Candidates

Candidates will be required to demonstrate extensive previous experience in the development and control of real time computer systems based on large minis, e.g. VAX and Honeywell.

Candidates must have up-to-date experience in structured design and implementation techniques as well as experience in estimating, resourcing, project planning and control.

Their career to-date will show an above average rate of progress, variety of experience and previous positions of responsibility. It is unlikely that suitably qualified candidates will be below the age of 30.

The Position

The successful candidate will be responsible for one or more projects being undertaken on behalf of clients. This could require different responsibilities on different projects simultaneously. Self presentation in the form of written and oral communication is a normal and regular requirement of the job as is a professional manner with clients and staff. The opportunities for advancement are excellent. The position is based in Central London although some travel to client sites will be required.

The Company

Our client is a successful, profitable and expanding company with an International reputation for advanced computing and communications skills. They provide services and products in various countries around the world to major companies, professional bodies and government organisations. For employees the company provides an excellent range of benefits including relocation assistance where appropriate. Prospects for advancement and long term career development are excellent.

Apply in confidence to Terry Harpey by sending personal and career det or contact him for an application form, evenings Gt. Missenden (02406) or contact him for an application form.

H. R. Associates Ltd

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Permanent Appointments

Programmers, Coventry, to £8,500

Multi-national company with a huge commitment to DP resourcing requires experienced Cobol programmers. Experience of IMS DB/DC and TSO a definite advantage. Contact Phil Harkcom or fill in the coupon below quoting ref: PH/J0021.

Personal computing, technical support, Warwick, to

Can you advise on, evaluate and support commercial packages for personal computers? This manufacturer is looking for key support people to back their dealer network and enhance their product range. Contact Phil Harkcom, or fill in the coupon below, quoting ref:

Senior Designer, Birmingham, to £10,000

PL1 MVS DL1 CICS. A unique opportunity to join a major international company who, having just purchased a new 3033, are now investing in a major new expansion program. Phone Leofrick Kingsford-Smith or fill in the coupon below, quoting ref: LKF/J0051.

Programmer, Bristol, £7-£8k

PL1 MVS, having recently upgraded their mainframe to a 4mb IBM 3032, this leading assurance company is looking to recruit a career orientated programmer with 2 vears plus experience. Please phone Leofrick Kingsford-Smith or fill in the coupon below quoting ref: LF/J0004.

Marketing oriented systems analyst, c£11,000 + car

Required by a systems house in the West Midland area, to support the sale of turnkey mini computer systems. Must have good communicative skills in both a technical and marketing environment. Please phone Rod Beeson or fill in the coupon below quoting ref: RB/J0052.

Contract Assignments

BM COBOL IMS DC Programmer IBM OS COBOL Programmers IBM Shadow TOTAL COBOL Programmers IBM Analyst PL1IMS/DC Programmers CL GIII VMEB SCL Cobol Programmers RSX11 RTL2 Programmers ADP IPL Programmer VAX11/780 Analyst VAX11/780 Programmers

Experienced Financial Analyst IMS DBA Senior Manufacturing Analyst Burroughs 7800 COBOL DMS 2 Programmer Microcomputers (CPM) Analyst Programmers Microcomputer Technical-writer IBM DOS VSE Cobol Programmer

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Mad (no steep) to FREEPOST, Computer People Midlands, Alpha Tower, Birmingham B1 1BR

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ADABAS NATURAL DOS CICS COBOL (DL1) DEC PDP11 RSX 11 RTL2 IBM OS PL1 (IMS DB)

ANALYSTS + PROGRAMMERS ANALYST/PROGRAMMERS PROGRAMMERS PROGRAMMERS PROGRAMMERS

OUR CURRENT REQUIREMENTS INCLUDE

IBM OS/MVS PL1 (IMS) IBM OS PL1 CICS IBM VM/CMS COBOL IBM OS PL1 IBM + MARK 4 + COBOL IBM OS/COBOL (FINANCIAL EXPERT) IBM DOS COBOL IBM SYSTEM 34 RPG2 IBM OS COBOL FINANCIAL EXPERIENCE IBM DOS CICS COBOL (MARCH/APRIL) IBM OS CICS COBOL (MARCH/APRIL) ANALYSTS + PROGRAMMERS PROGRAMMERS ANALYST/PROGRAMMERS **PROGRAMMERS PROGRAMMERS PROGRAMMERS** ANALYST/PROGRAMMER PROGRAMMERS PROGRAMMERS ANALYST/PROGRAMMERS ANALYST/PROGRAMMERS

SYSTEMS PROGRAMMERS

IBM OS/VSI VTAM VSPC

ICL
ICL ME29 IDMS + COBOL + TIME
ICL SYSTEM 10/25 + MACHINE CODE
ICL 2900 VMEB/IDMS + TP
ICL (OR IBM) APL
ICL 2900 + APS MANAGER
ICL 1900/2900 GEORGE 2 PLAN + COBOL
ICL 2900 DME COBOL TPS
ICL 2900 VMEB IDMS TMPS (APRIL)

ICL 2900 VMEB IDMS TMPS (APRIL)

SYSTEMS PROGRAMMER SYSTEMS PROGRAMMER

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ANALYSTS

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SYSTEMS PROGRAMMERS

PROGRAMMERS + ANALYSTS WITH ANY OF THE FOLLOWING SKILES: PL1 FORTRAN 4 MARK 4 COBOL WITH OS/MVS+/-IMS/DB/DC

A Computer Search contract starts by calling Kelly on Hernel Hempstead (0442) 40761 (24 hour answer service)

> Computer Search (Contracts) Ltd., Hamilton House, Marlowes, Temel Hemostead, Herts. HPI JBB.

> (0442) LN764

Computer Search **Contracts**

Sales Engineer **Computer Graphics**

CalComp is the world's leading manufacturer of computer graphic peripherals and systems, with an enviable record for innovation in this apidly expanding sector of the computer market.

A vacancy now exists for a sales engineer to look after increasing sign activity in an area covering South Wales and South West England.

Preferably already living somewhere within this area, the successful applicant, male or female, will be responsible after initial product training for selling our full range of pen and electrostatic plotters, controllers, graphic COM systems, digitizers and graphics display terminals

You will work mainly from home and we would expect you to have the ollowing qualifications:-

* proven experience and a good record in the sale of computer systems, peripherals or software.

* a technical background and an understanding of scientific and engineering computer applications and, preferably, CAD.

This is an excellent opportunity to join the leader in the field and to manage your own territory. We offer a very attractive salary package, plus a company car, and other fringe benefits such as free BUPA membership.

If you are interested please write to or ring: Linda Barber, CalComp Ltd., Cory House, The Ring, Brucknell, Berks. Tel: 0844 50211.

CALCOMP

Network Development

The Rutherford Appleton Laboratory, part of the Science and Engineering Research Council, supports scientific researchers throughout the country. The Computing Division, which provides large scale computing services, and co-ordinates computing research, programmes, has posts available in network development areas.

The Laboratory plays a major role in the development of the SERC X25-based network which covers most of the United Kingdom. It is also active in the field of high speed local networks both to support numerous on-site applications and to support research in computer networking. A number of Cambridge Ring projects are under way, and other technologies are being investigated. It is planned to set up a central flectore serviced by a very high speed bus giving access to the local computers at disc speeds.

Computing facilities on-site include a large HiM complex, GEC, PRIME, PDPH, VAX, PERQ and other computers.

Applicants should have a degree in a numerate subject, computing experience and preferably some knowledge of computer networking.

Posts will be in the following grades:

Scientific Officer

Rosearch Associate

(fixed 3 year term)

26,302-£8,506

Some assistance with removal expenses may be allowed in appropriate cases.

The Laboratory is a friently compounter with a citation in appropriate cases.

Some assistance with removal expenses may be allowed in appropriate cases.

The Laboratory is a friendly community with its own restaurant and extensive spotanistics nearby. We offer excellent working conditions and benefits include a local transport service, generous holidays, sick leave allowance and a non-contributory

superannuation scheme.

Contact Recruitment Office, Personnel Group, Rutherford Appleton
Laboratory, Chilton, Dideot, OXON. OX11 OQX, or telephone (Abingdon 2190)
Ext. 510) quoting ref VN 014.

Closing date for applications: 4th March, 1982 ications: 4th March 1982.

Rutherford Appleton Laboratory

In the forefront of research

instron is one of the most successful and advanced mar materials testing equipment in the world.

We require a Senior Software Engineer probably educated to degree level and aged 30+ take a key position in a new term and ator technology to our standard range of testing machines

The team is concerned not only with the development of standard products but also with sustamilised computer systems for use by materials scientists in our worldwide marketplace.

Experience of real time multitasking operating systems applied to instrumentation products is essential and experience of DEC RSX software is highly desirable. We are not just looking for a software engineer but an engineer who wants responsibility and involvement in making computer systems do useful things for materials scientists.

In keeping with the high standards we maintain, the Company is able to offer an excellent starting salary with four weeks' holidays p.e. and appropriate trings benefinish include a non-contributory pension and life assurance scheme. A contribution will be made towards relocation expenses if appropriate.

For an application form pleasaring the Personnel Department or write to the Personnel Mahager enclosing a detailed o.v. Instron Limited, Coronation Road, High Wycombe, Bucks HP12 3SY. Telephone: High Wycombe (0494) 33333. The Queen's Award for Esport Achievament. Man or Women may apply (8423)

NORTINI

Milamaniges: -Data Systems

Racal-Mobilcal

World leaders in electronics

Racal-Mobileal Limited, is a leading member of the Racal Flectronics Group and specialises in the design and manufacture of sophisticated mobile

communications equipment Geographically well placed in Reading, Berkshire, the Company is currently experiencing its most successful year and, in looking to advance still further technologically, seeks to recruit for its Engineering Department a DATA SYSTEMS MANAGER.

This position will carry the responsibility for all aspects of the Engineering Data Base Systems including PDS activities, P.C.B.

layout, drawing reproduction

facilities and Company O & M Applicants should be aged 35+

and be technically qualified to at least H.N.C. standard. At least 10 years' Drawing Office experience, including senior supervisory responsibilities is essential together with a knowledge of, and practical experience in, computer based documentation systems. Involvement in CAD/CAM techniques is highly desirable.

For this post - one which offers its own unique challenge—the Company provides a competitive remuneration package, over five weeks' annual holiday, pension and free life assurance scheme.

Assistance with re-location expenses will be given in

Letters of application, stating age, qualifications, experience, and salary expectations should be addressed in confidence to: -Mr. G. E. Fisher.

Personnel Manager, Racal-Mobileal Limited, 464 Basingstoke Road, Reading, Berkshire.

RACAL

Senior ComputerEngineer

London based c.£11,000 + car + relocation

Don't miss this opportunity to talk to United Computing, one of Europe's leading computer services bureaux. Because we offer all the opportunities associated with dynamic growth to a high calibre systems engineer, male or female. Our expansion, based on increasing ability to meet the increasingly specialist needs of our clients, means there are dyour problem solving trouble-shooting expertise within the Technical

or our clients, means that we need your problem solving trouble-shooting expertise within the technical Services Division of our Southern Regional operations.

Based on one of London's most modern and stimulating computer bureau environments, you'll be applying your skills to SIGMA and DEC 10 complexes, including IBM plug compatible peripherals. Specialist computer training is available if necessary, but you must be appropriately qualified (to ONC or equivalent level) with at least three years' maintenance or field engineering experience. Specifically, we require you to have knowledge of; maintenance of mini/mainframe CPU; fault finding; repair at Chip level; maintenance of disc and

Meet us at The Portland Hotel, Piccadilly Gardens, Manchester Wednesday, February 17th Anytime between 11.00a.m. and 7.00p.m. or Telephone London Office any day 01-253 1066 (reverse charges if you wish)

Whether you walk in to meet our Engineering Manager or talk to Helen Gardiner, our Personnel Director, over the phone, you will be able to discuss all the rewards and career prospects that only a major organisation can provide. But if neither alternative is possible, just write for an application form to United Computing, United House, 56/84 Leonard Street, London EC2A 4AN.

United Computing

HIGHWAYS & TRANSPORTATION DEPARTMENT

Engineer/Programmer £5,064-£7,137

Ye are seaking a graduate engineer with experience in computer programming to work on CAD and related projects: A working knowledge of FORTRAN is easengled and some experience or training in traffic engineering/highway design would be an advantage. Maidstone based with flexible working hours in operation, Staffing salary will depend on experience. Application form returnable by 26 February from the county Surveyor, Sandling Block, Springfield, Maldstone (Ref. ROSSI), (SAE please.)

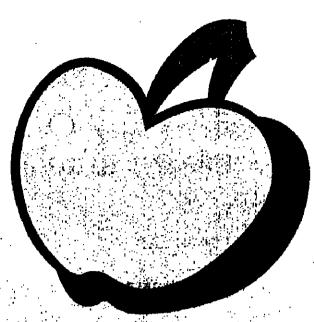
work on their multi-access reservation system. Applicants should have an active interest in microprocessor software, and hardware and be able to work on their own initiative. Travicom systems use Z80 microprocessors.

PROGRAMMERS/ SENIOR PROGRAMMERS TEAM LEADER

Location: Ascot/Maidenhead area. Apply with CV to Personnel Manager, 13 Her-mitage Parade, High Street, Ascot, Berks SL5

to £9,500

to £11,500



Aplum job?

Bell Fruit U.K. Ltd., a major national operator of gamin equipment based at Pewsey, Witshire require a

Data Control Supervisor Bell Fruit use two IBM 5280 micro systems to process machine income and stock control and the new position will involve working on the development of new systems. The successful applicant will have sound knowledge of Data Control and ideally experience of mini or micro systems.

A Relocation Package is Available To find out more ring Kay Stebbings on 01-836 8411 (reverse charges accepted).



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f you can honestly say yes to the above and you are self motivated with a lively personality then ring MARTIN DUGGAN now.

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Integrated Circuit Design **Automation**

working at the heart of the micro-electronics revolution and is constantly expanding its activities. One of our key growth areas is the automation of integrated circuit design and to support this activity we will shortly be commissioning an IBM 4341 installation which will be running MVS and TSO.

Against this background, we now need to recruit the following Systems/Software professionals for our Design Automation Department in Bedford.

Installation System Manager

To ensure the efficient use of the new machine and be responsible for user training and consultancy activities and the supervision of every aspect of its day-to-day operation. You should have experience of IBM operating systems, preferably including MVS and possibly gained in a technical research and development role. Good communications skills

Senior Software Engineer

We are also looking for a Senior Software Engineer with experience of CAD-type programs (e.g. In support of integrated circuit design and development) to assume responsibility for one of our DA project areas. Design automation tools include logic and schematic simulators, compilers and layout geometric and schematic verification tools implemented in FORTRAN and PASCAL.

Both positions carry a competitive financial package, exceptional career progression opportunities and relocation expenses where appropriate.

Men or women should contact Jane Sparrow for an application form on Bedford (0234) 223442 or write to the Personnel Department, Texas Instruments Limited, Manton Lane, Bedford MK41 7PA.



KUWAIT

Our client is a highly successful distributor for two major international organisations and has established a large base of prestigious users in Kuwait and now wishes to make the following appointment.

MAINTENANCE ENGINEER WORD PROCESSING SYSTEMS

Earnings scale from £11,000 upwards – Tax free

- Rent free, air conditioned accommodation
- Free, air conditioned car
- Return air flights to UK, twice yearly

CONTACT



Crown House, Morden, Surrey, SM4 5EU, London England

Programmer

Boost your career prospects in a high technology industry

The National Nuclear Corporation continues to make increasing use of computers and computing methods in all aspects of its business.

A large terminal network, based on DEC VAX 11/780 computers, is now operational and provides access to a number of large IBM, CDC and ICL mainframes.

A vacancy exists in our COBOL programming team based initially at Risley, but with relocation to Knutsford. Cheshire

The successful candidate will have at least two years COBOL experience on DEC or IBM equipment, be qualilied (o degree ievel and will Essential requirements will be self motivation, ability to work with minimum supervision and be capable of completing projects to time scale

The Company will offer a competitive salary to the right person. In approved cases, the Company will offer an attractive relocation package including agent and legal lees.

There are the usual large company benefits including contributory pension and life assurance scheme plus contributory. tory private medical assurance scheme

Why not make the right move now? Write or telephone for an application form quoting refer-

ence No. R028/CW to:

Mr. K. A. Sykes, National Nuclear Corporation Limited, Warrington Road, Risley, Warrington, Cheshire, WA3 6BZ Tel: Warrington (0925) 51291 ext. 404/288.

National Nuclear Corporation Limited

VLSi Design Methodology

gineering. The Mars Laboratories, The University of Newcastle upon Tyne NEI 7RU, from whom further particulers can be obtained. The olosing date for receipt of sp-dications is 18th February 1862.

CANADA

A major company in the petro-chemical industry in Celgary is sacking experienced Pro-grammers, Analysis and Com-puter Personnel of all levels.

Experience with IBM computers would be preferred but not

Please send comprehensive resume to Angele S, Gibbons, RODERIC UNGER and PARTNERS LTD.

SYSTEMS ANALYST

High Technology Manufacturing Applications

Up to £10,000

Are you happier dealing with tangible products rather than pieces of paper? If so, this opening will interest you.

Our clients are a go-ahead, innovative British organisation (part of a large Group) with factories in the UK and branches throughout the world. The products incorporate the latest developments in electronics, optics, lasers and precision mechanical engineering. Over 80% of production is exported.

A wide range of new projects is planned, and hardware is being upgraded to IBM 4341. To handle this spectrum of varied, interesting new developments, we seek a Systems Analyst who understands and is interested in production applications.

You should have upwards of two years' systems analysis experience in a manufacturing environment, or be able to demonstrate an aware ness of manufacturing applications. A programming background. although useful, is not essential.

In addition to an attractive starting salary, our clients offer a comprehensive employment package, including Company pension scheme, annual bonus, season ticket loan and flexible hours.

Please ring us for a confidential discussion, write briefly, or leave a message on our answering machine after hours, quoting reference 711.



At Microsystems '81, the formula was right — "excellent" and "very good" was how the quality of visitors and business enquiries were rated by the people who matter — the exhibitors.

Some of their comments:

"High quality of visitors and enquiries. Will certainly attend in 1982!

Ohio Scientific (UK) Ltd.

"...a very successful exhibition!" Micro Scope Ltd.

"Successful introduction of latest low complexity colour display." Microvitek Ltd./Bradford Council.

"Ninety-five quality enquiries." Seno Systems Ltd.

"The show was great — it surprised us the first time — it was even better in 1981. The quality of enquiries and visitors asking searching questions was excellent and, better still, they spent big money! Yes, it works!" Anadex Ltd.





MCROSYSTEMS'82

QUALITY VISITORS The facts speak for themselves

Attendance: 6,308.

Over 2 years, this represents a 65% increase.

Over 40% of visitors were Directors and Senior Management, and other roles represented were:

Senior Development Engineers Programmers. Senior Engineers: Chief Planners -- Local Government and Government :: Operations Managers
Development Engineers O& M Officers Design Engineers Consultants

Lecturers.

Project Leaders

Research Managers

Surveyors Systems Support Managers Tèchnical Engineers **Chief Engineers** Senior Electronic Designers Senior Software Specialists Programme Analysis Systems Administrators Operations Controllers Geophysicists. Systems Analysts

ight—the correct balance of USERS -SPECIFIERS—and the people who control their company's expenditure.

MCROSYSIEMS'82

Where product launches get maximum coverage

Over 20 exhibitors launched new products or services at Microsystems '84, and these were seen not just by the 6,308 top quality business visitors to the show, but also generated huge interest amongst the press who attended.

Extensive PR coverage before the event ensured the attendance of over 80 journalists. Both UK and overseas publications were represented and among the media who visited were:

BBC Radio 4; BBC TV, Granada Technical Books, Electronic Engineering, Computable (Holland), The Sunday Times, OEM Design, The Economist, Personal Computer World, Electronic Engineering Times, Electronic Times, Process Engineering, Databus (Holland) and Microsystems (France).

OVERSEAS INTEREST!

As well as achieving considerable note from overseas publications, Microsystems !81 was visited by an impressiv number of overseas business visitors from 37 countries:

Australia, Austria, Belgium, Canada, Cyprus, Czechosłovakia, Denimarki, Egypt, Eire, Finland, France, West Germany, Greece, Holland, Hong Kong, Hungary, Israel, Italy, Kenyd, Lebanon, Malta, New Zealand, Norway, Sultanate of Oman, Pakistan, Philippines, Portugal, South Africa, Saudi Arabia, Spain, Sweden, Switzerland, Turkey, USA, Yemen, Yugoslayia. At Microsystems – the overseas business potential comes to

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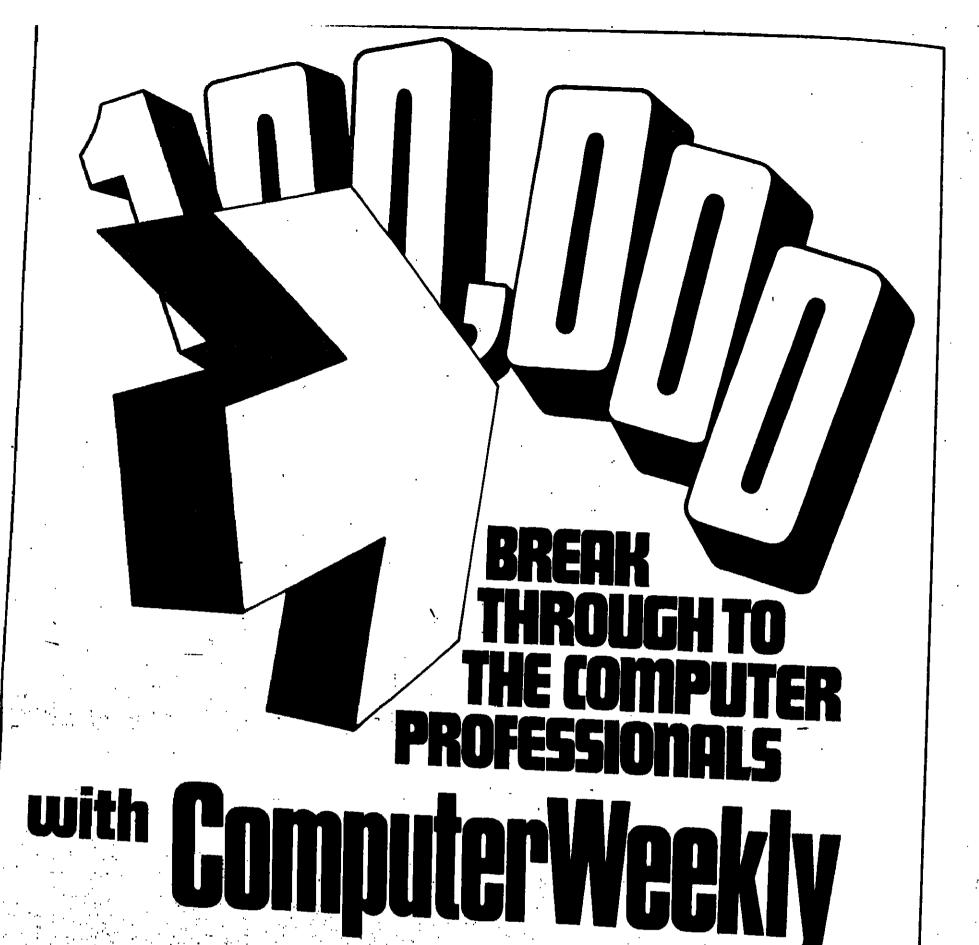
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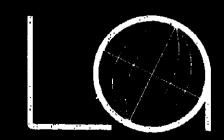
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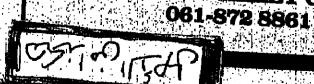
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Find the people who influence the decisions

IN my recent article on the difference between the "ac-tual" and the "assumed" deers for part of what maybe two-system solution.

He is unwittingly fishing the organisation within the organisation and, depends upon its strength, may be proposing a solution without alternatives that may uling tely become politically actenable. ision-maker in the company hierarchy, I pointed out that the person at the top of the company pyramid s an essential contact when any major sale is being made but not necessarily the one who will make the final deci-The salesman who miss pates this will identify a pressure groups, take the

There is another idiosyncratic element of the deciion-making process that insular needs into score and propose alternative to lutions that keep him in the can also be overlooked: the unofficial company organi-sation that exists within the running no matter what the official one. In many comultimate outcome of the panies and institutions, various power groups and political lobbying.

There are lots of other hidden factors that are not the political lobbying. groups of people that is more powerful than the official "family tree." declared within the office

SALES BIT

The larger the organisa-tion, the more likely this is. It can be a subtle trap for the unwary salesman who does not realise that the organisation chart the managing director was so happy to give him is more of a camoulage than a selling aid.

flage than a selling aid.

The salespeople most affected by these hidden forces are those involved in products which, by their very nature (usually high capital value), imply a substantial period between initial contact and the final decision.

Without doubt, the best way to penetrate the hidden organisation is from beneath. In some cases, middle management may know who calls the tune; in others the answer may best be found on the shop floor.

duction manager could also be the chairman's favourise grandson. Ignore him at One of the most common forms of hidden influence your peril! on the decision-making will have an informal reorga-nisation to divert business activity around an indiprocess is the introspective pressure group, whose vidual who officially, has I fairly senior position. This primary interest lies not with what is best for the usually due to his incompe tence or that he is politically company at large, but for its own limited sphere of in-fluence. For example, a company

deciding upon a computer both to process accounts and handle production. Probably the computer that was initially installed some years ago was for accounting purposes only, and consequently was controlled by the chief accountant, as were subsequent machines that also catered for produc-

The production depart-ment feels like a poor rela-tion and believes that its requirements are always given reality, they should have top. So this time they are determined it will be different. They have had a long

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oning exactly and a second primary of the control o

are needed to ensure the continued success of this leading manufacturer selling to end-users and distributors. Excellent basic salary. Good product training and support. Realise your earning potential now! (JA 2298)

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00 have a real understanding how much clout each senio executive really has. **SNR PROG**

There are often managen working "under the influence." This person dost whatever a particular individual says, or is subservent to a particular lobby. Sources of powerful for fluence are often outside the

company structure.
The "lightweigh

paper, he may be top of the

heap, but the people vio really make the decision for

his rubber stamp approval

ten than not, the influence

will stem from one person who, in turn, will have friends and allies within the

Then, there are the "shooting stars." These are

the up-and-coming work boys who exist in many

companies, already ear-

marked for stardom. Su

very often that assistant pro-

eral,

'light weight gen-

for example: 0

Then there are favourites. Chief executives, usually of low competence, have people for whom they have strong personal liking and whom they allow to cloud their judgment. That a particular decision is outside their sphere of competence to be of

00

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